African American Studies
(College of Letters and Science)

Department Office: 660 Barrows Hall, (510) 642-7068
socrates.berkeley.edu/~africam
Chair: Stephen Small, Ph.D.

Professors
Charles Henry, Ph.D. University of Chicago. Black politics, public policy
Pedro Nogueira, Ph.D. Yale University. Political sociology, social change
Michael S. Laguerre, Ph.D. University of Illinois. Caribbean anthropology
William M. Banks (Emeritus) Ed.D.
Margaret B. Wilkerson (Emeritus) Ph.D.

Associate Professors
VeVe Clark, Ph.D. University of California, Berkeley. Francophone and Anglophone literature of Africa and the Caribbean
Stephen Small, Ph.D. University of California, Berkeley. Sociology
Ula Taylor, Ph.D. University of California, Santa Barbara. African history

Assistant Professors
Brandi Wilkins Catanese, Ph.D. Stanford University. Drama and humanities (Theatre, Dance, and Performance Studies)
G. Ugo Nwokeji, Ph.D. University of Toronto. African and African American life, the Atlantic slave trade
Leigh Raiford, Ph.D. Yale University. African American studies and American studies

Adjunct Professor
Robert Allen (Graduate Advisor) Ph.D. University of California, San Francisco. Sociology

Affiliated Professors
Jocelyn Guilbault, Ph.D. University of Michigan. Caribbean music studies, popular music, cultural studies (Music)
Wilma Marx, Ph.D. University of Florida, Berkeley. Recent U.S. black, cultural, intellectual history (History)
Mary Lovett of’Neal, M.F.A. Columbia University. (Art Practice)
Tyler E. Stovall, Ph.D. University of Wisconsin, Madison. French history (History)
Min-ha T. Thinh, Ph.D. University of Illinois. Feminist theory, film theory and production, comparative literary and art theory, cultural politics, Third World arts and politics

Overview of Curriculum
The Department of African American Studies offers students a bachelor of arts degree as well as a minor in African American studies. The curriculum focuses on Africa and the African diaspora, with particular attention paid to the life and culture of the populations of African descent in North America and the Caribbean. There is also some focus on populations of African descent in Latin America and Europe. The program is interdisciplinary and prepares students to use and develop analytical approaches to critical issues associated with the African diaspora.

In preparation for declaring a major in African American studies, students should complete the Reading and Composition requirement and freshman/sophomore seminars. African American Studies offers lower division courses that satisfy the American Cultures and College of Letters and Science breadth requirements. For a list of current American Cultures and College of Letters and Science offers lower division courses that satisfy the African American Studies breadth requirements, see the departmental course offerings. The remaining three courses may be taken in the department office.

Honors Program
To be eligible for admission to the honors program, a student must have completed at least two semesters at Berkeley and have attained senior standing with a GPA of 3.5 or higher in all University work, as well as a 3.5 GPA or higher in the African American studies major. Students in the program will complete two consecutive semesters of African American Studies. H195A-H195B, Senior Honors Thesis under the supervision of a faculty member, culminating in the completion of a senior honors thesis or equivalent project.

Minor Requirements
Students in the College of Letters and Science may complete one or more minors of their choice, normally in a field both academically and administratively distinct from their major.

For the minor in African American studies, students must complete six upper division courses selected from AAS 4A, AAS 4B, AAS 5A, or AAS 5B and five upper division courses in the Department of African American Studies.

Consistent with Letters and Science requirements, a GPA of 2.0 is required in all courses applied to the minor program. All courses in the minor must be taken for a letter grade. Students may petition to have transfer credits accepted, but transfer students must take a minimum of three upper division courses from the Department of African American Studies.

Old Major Requirements
Program changes were effective beginning fall 1995. Students who declared the major before fall 1995 are not required to meet the new requirements. Their programs of study will be based on existing requirements.

Students completing College of Letters and Science breadth requirements under the six-course rule should consult with the department regarding the breadth requirement. Refer to requirements listed in the College of Letters and Science announcement, “Earning Your Degree.”

Graduate Program
Students are admitted to graduate studies in the fall semester only. Applicants must file a University of California, Berkeley graduate application, two official transcripts from each college and universities attended; three letters of recommendation; writing sample (no more than 14 pages) that best reflects their program/research interests. TOEFL is required for all international students. Applications are accepted for the Ph.D. only.

The African American Studies graduate program focuses on life, culture, and social organization (broadly defined) of African descent. Africa, North America, and the Caribbean are central components of the program. Students are expected to apply a multidisciplinary approach to the study of the international and national divisions of race as they pertain to persons of African descent, wherever they may find themselves. Students must complete at least 30 units of coursework and complete a dissertation, theses, or comparable projects. Students are responsible for determining their course of study, which is individually arranged with the major advisor. The program requires the completion of a 3.5 GPA in coursework in the major with a minimum of 48 units of coursework. Students are required to complete all coursework, including courses taken pass/fail, as part of the major.

Fields of Emphasis
There are three emphasis areas in African American studies.

Issues of Development
The fields of emphasis are focused in two general areas representing current faculty fields of expertise:

Issues of Development, History of the African Diaspora; Social and Cultural Institutions; Urban Sociology; Politics of Culture; Political Economy of the Diaspora.

Cultural Studies
Comparative Literatures and Cultures; Critical Theory, Popular Culture, Performance and Film; and Women’s Studies.

The University requires a minimum of two years or four semesters of academic residence for all Ph.D. programs. Academic residence is defined as enrollment in at least 4 units in the 100 or 200 series of courses. Thus every graduate student must enroll in and complete a minimum of 4 units of upper division or graduate coursework or both per required semester of academic residency. The program will require at least 48 semester units. At least 24 of the 48 units completed must be graduate courses in the Department of African American Studies. After successful completion of coursework with a minimum GPA of 3.3, the department will administer a pre-qualifying examination based upon general knowledge in the field of African American studies.

Students who have been accepted to this program and have earned a master’s degree in another program will be evaluated based on requirements for the pre-qualifying examinations.

Lower Division Courses
R1A. Freshman Composition. (3) Three hours of lecture and one hour of discussion per week. Prerequisites: UC Entry Level Writing Requirement. Formerly 1A. Training in expository, argumentative, and other styles of writing. The assignments will focus on themes and issues in African American life and culture. Satisfies the first half of the Reading and Composition requirement. (F,SP) Staff

R1B. Freshman Composition. (3) Three hours of lecture and one hour of discussion per week. Prerequisites: UC Entry Level Writing Requirement and A1. Formerly 1B. Continued training in expository and argumentative writing, with an emphasis on critical analysis. Satisfies the second half of the Reading and Composition requirement. (F,SP) Staff

R4A. Africa: History and Culture. (4) Three hours of lecture and one hour of discussion per week. Emphasis on pre-colonial social, cultural, political, and economic structures; introduction to art, literature, oral traditions, and belief systems. (F) Nwokeji

R4B. Africa: History and Culture. (4) Three hours of lecture and one hour of discussion per week. Emphasis on social, political, and economic change in 20th century Africa, with an emphasis on the roles of modernization, urbanization, and the emergence of contemporary African states. (SP) Nwokeji

R5A. African American Life and Culture in the United States. (4) Three hours of lecture and one

B prefix=language course for business majors
C prefix=cross-listed course
H prefix=honors course
R prefix=course satisfies R&RC requirement
AC suffix=course satisfies American Cultures requirement

*Professor of the Graduate School
†Recipient of Distinguished Teaching Award
hour of discussion per week. A study of the genesis, development, and scope of African American culture, approached through an examination of selected art forms, historical themes, and intellectual currents. (F,SP) Allen

5B. African American Life and Culture in the United States. (4) Three hours of lecture and one hour of discussion per week. Emphasis on the social experience of African Americans. An interdisciplinary approach allowing students to explore the forces and ideas that are influencing the individual and collective African American experience. (F,SP) Staff

C15. Geographies of Race and Gender. (4) Three hours of lecture and one hour of mandatory discussion per week. What can geography contribute to our understanding of gender and race relations in a globalizing world? The course examines (a) how supposedly “natural” differences are actually produced through everyday practices in particular spatial contexts; (b) historical and cultural geographies of race and gender in the U.S. in relation to those in other parts of the world, including South Africa; and (c) how these concepts and comparative historical geographies can help us think critically and constructively about questions of social change in the face of globalization. Also listed as Geography C15 and Gender and Women’s Studies C15.

24. Freshman Seminars. (1) Course may be repeated for credit as topic varies. One hour of seminar per week. Sections 1-2 to be graded on a letter-grade basis. Sections 3-4 to be graded on a pass/fail basis. The Berkeley Seminar Program has been designed to provide new students with the opportunity to explore an area of interest under the guidance of a faculty member in a small-seminar setting. Berkeley Seminars are offered in all campus departments, and topics vary from department to department and semester to semester. (F,SP)

25AC. Male and Ethnic in American Culture. (3) Two hours of lecture and one hour of discussion per week. The course examines the interplay of ethnicity and male gender in three groups, Italians, Puerto Ricans, and African Americans. Interdisciplinary in approach, the course will reveal the complexities of gender, class, and race in the social quilt of American life. This course satisfies the American Cultures requirement. (SP) Staff

26. Black Music and Musicians in American Culture. (2) One and one-half hours of lecture per week. Examines the impact of African American music, and the artists who produce it, on American culture in the 20th century. (F,SP) Staff

27AC. Lives of Struggle: Minorities in a Majority Culture. (3) Three hours of lecture per week. The course investigates the interrelatedness of family, migration, and social and political thought of Africans traveling across the world. Taught by faculty members in departments all across the campus, the course will examine theoretical and conceptual issues; techniques for identifying existing research; and sources and methods of social research and data collection. The main focus will be on qualitative methods.

101. Race and Public Policy. (3) Three hours of lec- ture per week. This course examines the formation and implementation of public policies directly relevant to the black community. While the policies analyzed differ from year to year, basic public policy methodology will be introduced each year. (SP) Staff

109. Black and Male in American Life. (3) Three hours of lecture per week. Prerequisites: Upper division status. As an introduction to interdisciplinary research methods as they are applied to the study of African American communities, the course will examine theoretical and conceptual issues; techniques for studying existing research; and sources and methods of social research and data collection. The main focus will be on qualitative methods.

111. Race, Class, and Gender in the United States. (3) Three hours of lecture per week. Prerequisites: Reading and composition requirement. Emphasis on social history and comparative analysis of race, class, and gender relations and phenomena across the world. (SP) Staff

112A. Political and Economic Development in the Third World. (4) Four hours of lecture per week. An examination of the structural and actual manifestations of Third World underdevelopment and the broad spec- trum of theoretical positions put forward to explain it. Development will be viewed in the international and intranational perspective. (F) Hintzen

112B. Political and Economic Development in the Third World. (4) Three hours of lecture and one hour of discussion per week. A critical appraisal of the theoretically based policies employed by Third World na- tional and regional attempts at transition to modernized deve- loped socio-political and economic systems and an examination of the international and intranational impedi- ments to Third World development. The focus will be on the opportunities and constraints that represent the diversity of developing countries. (SP) Hintzen

116. Slavery and African American Life Before 1865. (4) Three hours of lecture and one hour of dis- cussion per week. This course will examine the origins of the African slave trade, and explore political, eco- nomic, demographic and cultural factors shaping African American life and culture prior to 1865. (F,SP) Taylor

117. African Americans in the Industrial Age, 1865-1970. (4) Three hours of lecture and one hour of discussion per week. With emphasis given to the organization of labor after slavery, this course will explore the history of African American cultural, institutions and protest traditions from the Civil War to the Civil Rights Movement. (SP) Taylor

119. Selected Topics in the Sociohistorical De- velopment of the Black World. Course may be repeated for credit. One to four hours of lecture per week per unit. Prerequisites: Determined by offering. Topics will vary each semester. (F,SP)

121. Black Political Life in the United States. (4) Three hours of lecture and one hour of discussion per week. Prerequisites: 5B or 116 and 117 or History 125A-125B. Analysis of the theoretical and historical development of African Americans’ political forms and expression. Examination of local, state, and federal po- litical processes and activities, and the development of black political ideologies, organizations, and move- ments. (SP) Taylor

122. African American Families in American So- ciety. (3) Three hours of lecture per week. Prerequi- sites: 5B or introductory course in sociology. Examines the historical roles and functions of families in the de- velopment of black people in America from slavery to the present. (SP) Taylor

123. Social and Political Thought in the Diaspora. (3) Three hours of lecture per week. An examination of social and political thought of Africans traveling across the Diaspora, with particular focus on the 19th and 20th centuries. (F,SP) Small

124. Political Philosophy of Martin Luther King Jr. (3) Three hours of lecture per week. Using the thought and actions of Martin Luther King, this course examines the major events of the Civil Rights Movement. Reading includes original works by King as well as secondary sources with a special emphasis on African American religion, nonviolence, and integration. (F,SP) Staff

125. History of the Civil Rights Movement. (4) Three hours of lecture per week. The objective of this course is to examine the modern civil rights movement. As un- derstood traditionally, this period began with the United States Supreme Court decision of May 17, 1954, Brown vs. Board of Education, until the passage of the Voting Rights Act of 1965. This course will seek to place this movement in the context of global de- velopments and in the context of the broad sweep of United States history. Assigned readings consist of his- torical documents and recent works. It will examine the readings in context, discussing the material and its significance in the overall history and culture of African Americans. Visual and musical media will augment the class lectures. (F,SP) Taylor

126. African American Women’s History. (4) Three hours of lecture per week. The objective of this course is to examine substantive issues in the African American female experience from colonial times to the pre-
sent. The dominant themes of this course include family, work, community, sexuality, and individual and collective activism. Particular attention will be paid to the interplay of the various aspects of race, class, and gender in American society. Assignments readings consist of an introduction to the scholarly secondary literature on African American women’s history. Lectures and discussions will examine the readings in context. Videos will augment the lectures and discussions. (F) Taylor

131. Caribbean Societies and Cultures. (3) Three hours of lecture per week. Comparative study of Spanish, Dutch, English, and French-speaking Caribbean societies. Analysis of Caribbean social structure including: the plantation system, urban dynamics, ethnic politics, family structures, and ecology of African Caribbean religions. (SP) Laguerre

132. Psychology of African American People: Current Issues. (3) Three hours of lecture per week. Prerequisites: African 5B or 101A, or upper division course in psychology. Examines psychological research and theory pertaining to African American people. Emphasis on understanding the concerns, methods, and conclusions regarding African Americans offered by American psychology from its origins to the present. Also listed as Psychology C105. (F,SP)

134. Information Technology and Society. (4) Three hours of lecture per week. This course assesses the role of information technology in the digitalization of society by focusing on the deployment of e-government, e-commerce, the digital city, telecommuting, virtual communities, Internet time, the virtual office, and the geography of cyberspace. Course will also discuss the role of information technology in the governance and economic development of society. (F,SP) Laguerre

134. Information Technology and Society. (4) Students will receive no credit for C134 after taking 134A. Three hours of lecture per week. This course assesses the role of information technology in the digitalization of society by focusing on the deployment of e-government, e-commerce, the digital city, telecommuting, virtual communities, Internet time, the virtual office, and the geography of cyberspace. Course will also discuss the role of information technology in the governance and economic development of society. Also listed as American Studies C134. (F,SP) Laguerre

135. Caribbean Cultural History. (3) Three hours of lecture per week. An examination of the history and cultural evolution of the French, Dutch, Spanish, and English-speaking Caribbean societies from the slavery era to the Second World War. Particular attention will be paid to African-Caribbean cultural institutions and practices; immigration of Chinese, East Indians, and other groups into the Caribbean; and the development of African-Caribbean communities with special emphasis on social class, ethnicity, and culture. (SP) Laguerre

137. Multicultural Communities. (3) Three hours of seminar per week. Examination of theoretical issues in urban anthropology and sociology pertaining to the United States as a multicultural society. Comparative analysis of the ecology and social structure of African American, Native American, Asian American, Mexican American and other urban communities with special emphasis on social class, ethnicity, and culture. (F,SP) Laguerre

138. Black Nationalism. (4) Four hours of lecture per week. Prerequisites: SB. Examines the concept of black nationalism and its historical and intellectual development. Special attention will be given to the role of African American religion and the attempt to develop “black socialism.” (F,SP) Henry

139. Selected Topics of African American Social Organization and Institutions. (1-4) Course may be repeated for credit. One to four hours of lecture per week. Prerequisites: Determined by offering. Topics will vary each semester. (F,SP) Staff

142A. Third World Cinema. (4) Three hours of lecture, plus two hours of viewing/discussion per week. Prerequisites: Reading and composition requirement.

142A. Third World Cinema. (4) Three hours of lecture, plus two hours of viewing/discussion per week. Prerequisites: Determined by offering. Topics will vary each semester. (F,SP) Staff

142C. Black Theatre Workshop. (3) Course may be repeated for credit. Three hours of lecture per week. Prerequisites: 143A or equivalent or consent of instructor. Study and production of a play by an African American writer. The play will be studied within its social and historical context. Students will be introduced to the various aspects of production. Also listed as Theater, Dance, and Performance St C183B.

144. Introduction to Cultural Studies: Black Visual Culture. (4) Three hours of lecture per week. Prerequisites: Writing and composition requirement. This course examines theories of culture and contemporary popular culture studies on the instrumentality of culture as a vehicle of domination and resistance. The goal of the course is to provide the student with a critical vocabulary for cultural analysis. African American and Afro-Caribbean cultural institutions are studied as ideological, as social, and as political agents in the articulation, race and gender formation. Students must have a willingness to engage new and difficult ideas. (F,SP) Raiford

145. Gospel Chorus. (2) Course may be repeated for credit. Three hours of large ensemble and one hour of sectional classes per week. A course that will focus on the performance of choral music of the African American gospel music tradition with a particular emphasis on contemporary performance techniques. The Gospel Chorus, as is the case with other formal University music performance ensembles, will prepare music to be presented to the public in at least two concerts each semester. Students will be selected for the chorus on the basis of individual auditions. Also listed as Music C143. (F,SP) Henderson

146. History of the African American Music Theatre. (3) Course may be repeated for credit subject to acceptance of petition. Three hours of lecture per week. Prerequisites: Dramatic Art 120, senior standing, and consent of instructor. Taught on the origins and development of musical theatre productions, created, and performed by African Americans, with a view towards elucidating the dynamic role that African American musical theatre has played in the development of the mainstream American musical theatre drama. Also listed as Theater, Dance, and Performance St C133.

150B. African American Literature 1920 to Present. (3) Three hours of lecture per week. Survey of African American literature from the Harlem Renaissance to the present. A close analysis of major writers, premises. (F,SP)

151A. African American Plays from 1858 to 1959. (4) Three hours of lecture per week. Prerequisites: Reading and composition requirement. Historical analysis of plays by African Americans and the portrayal of the black experience in theatre. Emphasis on predominant themes, structural tendencies, socio-historical context. Also listed as Theater, Dance, and Performance St C131A.

151B. Contemporary African American Drama. (4) Three hours of lecture per week. Prerequisites: 151A or consent of instructor. Survey of contemporary plays by African American writers and the portrayal of the black experience in American theatre. Emphasis on predominant themes, structural tendencies, socio-historical context. (F,SP)

151B. Contemporary African American Drama. (4) Four hours of lecture per week. Prerequisites: 151A or consent of instructor. Survey of contemporary plays by African American writers and the portrayal of the black experience in American theatre. Emphasis on predominant themes, structural tendencies, socio-historical context. Also listed as Theater, Dance, and Performance St C131B. (SP)

152C. African American Dramatic Literature: Forms and Styles. (3) Three hours of lecture/laboratory per week. Introduction to African American analysis with emphasis on the primary theatrical form of styles chosen by African American playwrights and the thematic consequences of those choices. Plays will be analyzed both in their literature and as theatrical production; e.g., laboratory will include attendance at the plays and performance of plays. Also listed as Theater, Dance, and Performance St C132.

153A. Images of African American Women in Literature: Slavery to the 20th Century. (3) Three
hours of lecture and one hour of discussion per week. 
Prerequisites: Reading and Composition requirement. 
Analysis of the cultural, literary, and social assumptions that contribute to the various images of African American women in Western literature and African American writing. The course explores the literature of the 19th-century African American women, an expanding field in African American Studies. Also listed as Gender and Women's Studies C153A. (F)

C153B. Contemporary Images of African American Women in Literature, (3) Three hours of lecture and one hour of discussion per week. 
Prerequisites: Reading and Composition requirement. 
Analysis of the cultural and literary dynamic of literature and the image of the African American woman in contemporary Western African American writing. Also listed as Gender and Women's Studies C153B. (SP)

Prerequisites: Reading and Composition requirement. 
A survey of Negritude, a literary movement of writers from the Anglophone, Francophone, and Lusophone regions of Africa. See also the introduction to representative works, themes, and discourses in African literatures—produced by authors from the Anglophone, Creoleophone, Francophone, and Hispanicophone areas within Plantation America. Includes explorations of successive followings and national languages as sources for a re-examination of Caribbean culture and literary history. (F) Clark

155. Literature of the Caribbean: Significant Themes, (4) Three hours of lecture per week. 
Prerequisites: Reading and Composition requirement. 
An introduction to representative works, themes, and discourse in Caribbean literatures—produced by authors from the Anglophone, Creoleophone, Francophone, and Hispanicophone areas within Plantation America. Includes explorations of successive followings and national languages as sources for a re-examination of Caribbean culture and literary history. (F) Clark

156AC. Poetry for the People: Introduction to the Art of Poetry, (4) Course may be repeated for credit. 
Two to three hours of lecture and one to two hours of discussion per week. A large lecture/discussion course which introduces students to poetry as culture, history, criticism, politics, and practice. Focusing comparatively on poetry from three African American/ethnic groups, this course requires students to learn both the technical structure of various forms of poetry as well as the world views which inform specific poetic traditions. The groups and traditions vary from semester to semester. This course fulfills the Literature as requirement. This course satisfies the American Cultures requirement. (F,SP)

158A. Poetry for the People: The Writing and Teaching of Poetry, (4) Four hours of seminar per week, plus community workshop teaching. 
Prerequisites: 156AC (with permission of instructor). The focus of this course is on the writing of poetry, and students undertake an intensive study of both the techniques of poetry and the social and cultural context of specific poetic traditions. Students must "imitate" the poems they study, write critical papers comparing poetic traditions, and complete an original manuscript of new poems. In addition, they must produce an on-campus poetry reading and are required to teach for five to seven weeks at one of the assigned Poetry for the People venues. This course satisfies the Arts and Literature breadth requirement. This course satisfies the American Cultures requirement. (F)

158B. Poetry for the People: Practicum, (4) Four hours of seminar, discussion, and performance. 
Prerequisites: 158A. A teaching practicum, with the regular and active supervision of the instructor, for students who completed 156AC during the previous year and 158A. They serve as student-teachers for 158AC of the focus of 158B is on the teaching of poetry. Each student poet is responsible for a group of seven to ten students, and, under the direct supervision of the instructor, the students will be directed to develop his/her group learn to read, criticize, and produce poetry. This course satisfies the American Cultures requirement. (SP)

159. Special Topics in African American Literature, (1-4) Course may be repeated for credit. One to four hours of lecture per week per unit. 
Prerequisites: Reading and composition requirement, plus those set by instructor. Special topics in African American literature. (F,SP)

160. African Literatures, (4) Three hours of lecture and discussion per week. 
Prerequisites: 158A. An introduction to African and Caribbean literatures. The course sets the readings within the contexts of their articulation from the 1950s through 1990s, from dependence to independence and neo-colonialism or post-colonial writing. (F,SP) Clark

161. African Theater, (4) Three hours of lecture per week. 
Prerequisites: 160 or consent of instructor. 
The course introduces readers to dramatic texts produced in France, Africa, and the Caribbean from 1960 to the present. From Genet’s “The Blacks” through Aidoo’s “Anowa,” the perspective of analysis engages theory with practice. Based on a research-to-performance method, the course requires students to produce a one-act play derived from original or current research efforts. Clark

162. Caribbean Literature by Women Authors: Marasas, (4) Three hours of lecture per week. 
This course in literary theory uses concepts of twinning in African feminism to map binary oppositions in contemporary writing by women authors from the Caribbean. Includes novels and testimonial literature by authors from the Caribbean and Francophone and Spanish Antilles—namely, contemporary works by Merle Hodge, Jean Rhys, Simone Schwartz-Bart, Carolina de Jesus, and Rosario Ferre. (F,SP) Clark

163. African Literature by Women, (4) Three hours of lecture per week. 
Prerequisites: Reading and Composition requirement. 
This course introduces students to poetry as culture, history, criticism, politics, and practice. Focusing comparatively on poetry from three African American/ethnic groups, this course requires students to learn both the technical structure of various forms of poetry as well as the world views which inform specific poetic traditions. The groups and traditions vary from semester to semester. This course fulfills the Literature as requirement. This course satisfies the American Cultures requirement. (F,SP)

190AC. Advanced Seminar in African Diaspora Studies, (3-4) Course may be repeated for credit as topic varies. 
Three hours of lecture per week for a four-unit course, an extra assignment/research component will be added to the course to increase contact hours with students. Possible components include additional readings, outside of class research projects and other projects which the instructor feels will add to the value of the course. Topis to be announced at the beginning of each semester. This course satisfies the American Cultures requirement. (F,SP) Staff

H195A-H195B. Senior Honors Thesis, (3-3) Regular individual meetings with faculty sponsor. Credit for the completion of a minimum of grade to be awarded on completion of sequence. 
Prerequisites: Senior standing and 3.5 GPA overall and in major. 
The student will complete a primary research and writing project based on an analysis of an advanced topic with faculty sponsor. Submits a comprehensive research paper. Application and details at departmental adviser's office. Students must enroll for both semesters of the sequence. (F,SP) Staff

197. Field Study in African American Life, (1-4) Course may be repeated for credit. 
Enrollment is restricted; see the Introduction to Courses and Curricula section of this catalog. Must be taken on a pass/no pass basis. Supervised field work in off-campus or organizations. Regular individual meetings with faculty sponsor and written reports required. Independent study form available in department office. (F,SP) Staff

201A. Interdisciplinary Research Methods, (4) Three hours of seminar per week. 
This seminar will provide a detailed introduction and working knowledge of the various methodological techniques appropriate for interdisciplinary research on the African Diaspora.

201B. Qualitative Research Methods for African American Studies, (4) Four hours of seminar per week. 
A review of competing epistemologies in qualitative research of African Americans. (SP) Smyth

240. Special Topics in Cultural Studies of the Diaspora, (1-4) Course may be repeated for credit. 
One to two hours of lecture per week. Topics will vary from term to term depending on student demand and faculty availability. (F,SP) Staff

241. Special Topics in Development Studies of the Diaspora, (1-4) One to four hours of lecture per week. 
One hour of lecture per week. Topics will vary from term to term depending on student demand and faculty availability. (F,SP) Staff

251. African American Women's History, (4) Three hours of seminar per week. 
The course explores the literature of 19th-century African American female writers. The course is on the writing of poetry, and students undertake an intensive study of both the techniques of poetry and the social and cultural context of specific poetic traditions. Students must "imitate" the poems they study, write critical papers comparing poetic traditions, and complete an original manuscript of new poems. In addition, they must produce an on-campus poetry reading and are required to teach for five to seven weeks at one of the assigned Poetry for the People venues. This course satisfies the Arts and Literature breadth requirement. This course satisfies the American Cultures requirement. (F)

253A. Public Policy Analysis: Race and Culture in Domestic Policy, (4) Three hours of seminar per week. 
The course will use the issues of full employment and multiculturalism as an approach to examining the impact of race and culture on the U.S. political system. Our focus will be on the process of political innovation and agenda setting rather than the more traditional areas of institutional decision-making and implementation bias. In short, it is usually at the formative stage that crucial decisions are made. (SP) Henry

254. Globalization and Caribbean Modernity, (4) Three hours of seminar per week. 
The course examines the social construction of the modern Caribbean subject, the transnationality of the Caribbean state, the localization of the globalization process. Laguerre

256A. Multiculturalisms, (4) Three hours of seminar per week. 
The seminar uses an epistemological and hermeneutic approach to locate and study the ethnic question in the U.S., Canada, and Europe. It examines the social construction of the modern Caribbean subject, the transnationality of the Caribbean state, the localization of the globalization process. Laguerre

256B. Diaspora, Citizenship, and Transnationality, (4) Three hours of seminar per week. 
The seminar analyzes the social construction of African American diasporic communities in the U.S., Canada, and Europe. It examines the relations of the diaspora to the homeland in the context of the globalization process. The role of diaspora in migration and deterritorialization and the production of bigger, far-flung and multiple identities will be analyzed. Postnational models of citizenship—differentiated, transnational, and multicultu-
Agricultural and Environmental Chemistry

(College of Natural Resources)

Office: 111E Koshland Hall, (510) 642-5167
plantbio.berkeley.edu/newmp/academic/

Chair: Bob Buchanan, Ph.D.
Graduate Adviser: Anastasios Melis, Ph.D.

Professors
Leonard F. Bjeldanes, Ph.D. (Nutritional Science)
Bob E. Buchanan, Ph.D. (Plant and Microbial Biology)
John E. Cassida, Ph.D. (Environmental Science, Policy, and Management)
Bentley C. Leunig, Ph.D. (Nutritional Science)
Harvey E. Doner, Ph.D. (Environmental Science, Policy, and Management)
Robert Fischer, Ph.D. (Plant and Microbial Biology)
Sharon E. Fleming, Ph.D. (Nutritional Science)
Isao Kubo, Ph.D. (Environmental Science, Policy, and Management)
Shek Luan, Ph.D. (Plant and Microbial Biology)
John G. McCelld (Environmental Science, Policy, and Management)
Anastasios Melis, Ph.D. (Plant and Microbial Biology)
Norman Terry, Ph.D. (Plant and Microbial Biology)
Eugene Zavarin, Ph.D. (Environmental Science, Policy, and Management)

Associate Professors
George W. Ong, Ph.D. (Nutritional Science)
Krishna K. Niyogi, Ph.D. (Plant and Microbial Biology)

Program Overview

This graduate program is administered by an interdepartmental graduate program and is open to students who are interested in the application of chemistry to agricultural and environmental problems. A prerequisite for admission is completion of courses in biology, chemistry, mathematics, and computer science equivalent to a bachelor’s degree in chemistry or a biological science.

Studies leading to the M.S. and Ph.D. degrees are offered by a group of agricultural and environmental chemists, biochemists, and molecular biologists who are engaged in research in the areas of agricultural and environmental chemistry. The research is directed by a member of the group whose activities most closely coincide with the student’s interests. Courses may be taken in various departments of the College of Natural Resources, the Department of Molecular and Cell Biology in the College of Letters and Science, and the College of Chemistry. The following are examples of the fields represented: insecticide and natural product chemistry, soil chemistry, and forest products chemistry in the Department of Environmental Science, Policy, and Management; molecular biology of food legumes, food chemistry and toxicology, phytoremediation and environmental plant biology, and animal nutrition in the Department of Nutritional Science; and plant nutrition in the Department of Plant and Microbial Biology. In addition to the major field of specialization, predoctoral students must take courses in chemistry, biochemistry, and allied sciences as needed to enable them to pass the qualifying examination in agricultural and environmental chemistry.

Graduate Courses

299. Research in Agricultural and Environmental Chemistry, (1-12) Course may be repeated for credit. Approximately four hours of research per week per unit. Prerequisites: Graduate standing and consent of instructor. Research in agricultural and environmental chemistry. (F,SP) Staff
must complete the L&S seven-course breadth requirements and essential skills before graduation. Junior transfer students may satisfy these requirements by completing IGETC.

**Major in Environmental Economics and Policy**

The undergraduate major in environmental economics and policy (EEVECON) offers an opportunity to explore those areas of economic and political institutions which affect the development and management of natural resources and the environment. The focus of concern includes both renewable resources such as food, forests and water, and resources in fixed supply such as land and minerals. The distinctive feature of the major is that it adopts a problem-solving approach to these issues. The major requirement for the major is microeconomic theory, and the economics of resources and the environment. These core courses are supplemented by other courses that apply the methods of social science to resource problems.

The major is structured to ensure that students obtain a sufficient background in the natural and physical sciences and sufficient training in basic mathematics, statistics, and communication skills in order to approach resource-related problems in an effective and productive manner. It can also be an excellent preparation for business school. Students who graduate from the major are prepared to undertake a career in public or private agencies and firms engaged in the planning or management of natural resources, or to enter a graduate school for further study in programs such as economics, law, public policy, business, or resources administration.

**Lower division major requirements include a course in microeconomics and coursework in calculus (equivalent to Mathematics 6A-16B or 1A-1B) and statistics.**

**Upper division work includes courses in methods, core courses in environmental economics and policy, and courses in an area of concentration chosen by the student.** For specific major requirements, contact the Student Services Office, 203 Giannini Hall, (510) 642-3347 or go to are.berkeley.edu/UnderGradStudy.html.

**Minor Program**

Students may declare a minor in environmental economics and policy. A minimum of six courses from the ENVECON curriculum is required. Students must declare in advance their intention to minor with the undergraduate adviser. Students who believe they have already completed the requirements for a minor in economic risk and uncertainty certification. For more information, contact Gail Vawter, Student Affairs Officer, 203 Giannini Hall (510) 642-3347.

**Graduate Programs**

The Department of Agricultural and Resource Economics offers programs leading to the M.S. and Ph.D. degrees. Because of quota limitations, students are rarely admitted for the master's degree, although exceptions may be made in cases of exceptional promise or in special circumstances. Students are encouraged to consult the adviser and to make inquiries prior to submitting applications for admission.

**Environmental Economics and Policy**

**Lower Division Courses**

C1. Introduction to Environmental Economics and Policy. (4) Students will receive credit for this course after taking Economics 1. Three hours of lecture and one hour of discussion per week. Prerequisites: Mathematics 32. Introduction to microeconomics with emphasis on resource, agricultural, and environmental issues. Also listed as Economics C3. (F,SP) Staff

24. Freshman Seminar. (1) Course may be repeated for credit with different topic. One hour of seminar per week. Sections 1-2 to be graded on a pass/fail basis. Prerequisites: Economics 10A or 101A. Theory of externalities and public goods applied to pollution and environmental policy. Trade-off between production and environmental amenity. Assessing nonmarket and nonmarket environmental amenities. Remediation and clean-up policies. Environmental and development. Biodiversity management. Also listed as Economics C125. (SP) Staff

C102. Natural Resource Economics. (4) Three hours of lecture and one hour of discussion per week. Prerequisites: Economics 10, or Economics 100A or 101A. Theories of externalities and public goods applied to pollution and environmental policy. Trade-off between production and environmental amenity. Assessing nonmarket and nonmarket environmental amenities. Remediation and clean-up policies. Environ- mental and development. Biodiversity management. Also listed as Economics C125. (SP) Staff

C115. Modeling and Management of Biological Resources. (4) Three hours of lecture and three hours of computer laboratory per week. Prerequisites: Mathematics 16A-16B, or Economics 100A or 101A. Mathematical modeling of population growth, chaotic, and Leslie matrix theory. Harvesting and exploitation theory. Methods for analyzing population interactions, predation, competition, fisheries, forest stands, and insect pest management. Genetical aspects of population management. Mathematical theory based on real difference and ordinary differential equations. Use of simulation packages on microcomputer experience with computers not required. Also listed as Environ Sci, Policy, and Management C104. (SP) Getz

C118. Introductory Applied Econometrics. (4) Three hours of lecture and one hour of discussion per week. Prerequisites: Statistics 2 or equivalent. Formulation of economic hypotheses and testing of empirical strategies. Regression analysis with cross-sectional and time-series data; econometric methods for the analysis of qualitative information; hypothesis testing. The techniques of statistical and econometric analysis are developed through applications to a set of case studies and real data in the fields of environmental, resource, and international development economics. Students learn the use of a statistical software for economic data analysis. Also listed as International and Area Studies C118. (F) Sadoulet

131. Globalization and the Natural Environment. (3) Three hours of lecture per week. Prerequisites: Intermediate micro-economic theory or consent of instructor. An examination of the effects of globalization. How has increased international trade, the integration of factor markets, and the adoption of international agreements affected the environment? Case studies include the environmental impact of GATT/WTO and NAFTA. Multi-disciplinary approach examines the actual laws and institutions and the economic theories of globalization, in addition to the empirical evidence of globalization's environmental effects. (F) Karp

140AC. Economics of Race, Agriculture, and the Environment. (3) Two hours of lecture and one hour of discussion per week. Prerequisites: 1, or one lower division course in a social science, or consent of instructor. This course examines the effects of economic processes on the differentiation of race and other economic factors among racial groups in U.S. agricultural and environmental systems. It approaches economic processes as organizing dynamics of racial differentiation and integration, and uses comparative experience among different racial and ethnic groups as sources of evidence against which economic theories of differentiation and integration can be tested. This course satisfies the American Cultures requirement. (SP) Romm

141. Agricultural and Environmental Policy. (4) Three hours of lecture and one hour of discussion per week. Prerequisites: Economics 100A or 101A.
This course considers the formation, implementation, and impact of public policies affecting agriculture and the environment. Economic approaches to public lawmaking will be developed. Focus is on issues of policy rules, input market activity, and congressional control of bureaucracies. Case studies include water allocation, endangered species protection, water quality, food safety, drainage, water use, pesticides, and farmworker safety. Emphasis on examples from California. (F)

142. Industrial Organization with Applications to Agriculture and Natural Resources. (3) Three hours of lecture per week. Prerequisites: 100 or Economics 100A or 101A. Organization and performance of agriculture and resource markets. Conduct of firms within those markets, such as price competition, product differentiation, predatory pricing, vertical integration, dealer networks and advertising. The role of public policy. (SP) Staff

152. Advanced Topics in Development and International Trade. (3) Two hours of lecture and one hour of discussion per week. Prerequisites: 100 or Economics 100A. Course discusses recent efforts to understand behavior and institutions in village economies, with particular attention paid to the importance of risk. Economic analysis of savings, consumption, investment, production, trade, wealth distribution and institutions of villages in developing countries. Roughly equal parts of theory, evidence, and policy. (SP) Staff

153. Population, Environment, and Development. (3) Two hours of lecture and one hour of discussion per week. Prerequisites: 100 or Economics 100A. The course discusses recent efforts to understand behavior and institutions in village economies, with particular attention paid to the importance of risk. Economic analysis of savings, consumption, investment, production, trade, wealth distribution and institutions of villages in developing countries. Roughly equal parts of theory, evidence, and policy. (SP) Zilberman

161. Advanced Topics in Environmental and Resource Economics. (4) Three hours of lecture and one hour of discussion per week. Prerequisites: 100 or Economics 100A or 101A; 101 recommended. The roots of environmental and resource economics. Theories of land and resource rent. Models of optimal use of renewable and nonrenewable resources with applications to energy and timber. Balancing environmental and social values. Resource growth, and sustainability. Special topic: the problem of global climate change. (F)

162. Economics of Water Resources. (3) Two hours of lecture and one hour of discussion per week. Prerequisites: 100 or Economics 100A or 101A; 101 recommended. The roles of water: water supply and economic growth; water utility economics; irrigation demand; large water projects; economic impacts of surface water law and institutions; economics of satisfying water management. (SP) C175. The Economics of Climate Change. (4) Three hours of lecture and one hour of discussion per week. Prerequisites: Economics 1, International and Area Studies 106, 107, or equivalent. The course will start with a brief introduction and evaluation of the scientific assessment of global climate change. Economic concepts will be developed to be analyzed the impacts of climate change and provide critique existing and proposed policy tools. Specific topics studied are impacts on water resources and agriculture, economic evaluation of impacts, optimal control of greenhouse gases, benefit cost analysis, international treaty formation, discounting, uncertainty, irreversibility, and extreme events. Also listed as International and Area Studies C175. (F,SP) Auffhammer, Fisher

C180. Ecological Economics in Historical Context. (3) Three hours of lecture and one hour of discussion per week. Prerequisites: Eco 101A or equivalent. Economists through history have explored economic and environmental interactions, physical limits to growth, what constitutes the good life, and how economic justice can be achieved. Yet economists continue to use measures and models that simplify these issues and promote bad outcomes. Ecological economics responds to this tension between the desire for simplicity and the complexity of our world. (F) Conservation

C195. Senior Thesis. (4) Course may be repeated for credit. Individual meetings with faculty sponsor. Prerequisites: Senior standing in Environmental Economics and Policy and consent of instructor. Writing of a thesis under the direction of member(s) of the faculty. Subject must be approved by faculty sponsor. (F,SP)

H196. Honors Research. (4) Course may be repeated for credit. Individual research or meetings with faculty sponsor(s). Prerequisites: senior standing and a minimum 3.2 GPA. Eligibility restrictions related to GPA and unit accumulation. Open only to Environmental Economics and Policy majors. Supervised independent research in detail to advanced environmental economics and policy, followed by a written report to the department. (F,SP)

197. Field Study in Environmental Economics and Policy. (1-3) Course may be repeated for credit. Enrollment is restricted; see the Introduction to Courses and Curricula section of this catalog. Independent study. Minimum of three hours of work per week per unit of credit. Must be taken on a passed/not passed basis. Prerequisites: Consent of instructor. Supervised experience in off-campus organizations relevant to specific aspects of environmental economics and policy. Regular individual meetings with faculty sponsor and written reports required. (F,SP)

198. Directed Group Studies for Advanced Undergraduates. (1-3) Course may be repeated for credit. Enrollment is restricted; see the Introduction to Courses and Curricula section of this catalog. Independent study. Minimum of three hours of work per week per unit of credit. Must be taken on a passed/not passed basis. Prerequisites: Consent of instructor. Supervised experience in off-campus organizations relevant to specific aspects of environmental economics and policy. Regular individual meetings with faculty sponsor and written reports required. (F,SP)

199. Supervised Independent Study and Research. (1-4) Course may be repeated for credit. Enrollment is restricted; see the Introduction to Courses and Curricula section of this catalog. Independent studies. Must be taken on a passed/not passed basis. Prerequisites: Upper division standing and consent of instructor. Enrollment restrictions apply. Open to qualified upper division students wishing to pursue special study and directed research under the direction of a member of the staff. (F,SP)

Agricultural and Resource Economics

Graduate Courses

201. Production, Industrial Organization, and Regulation in Agriculture. (4) Three hours of lecture and one hour of discussion per week. Prerequisites: Economics 201A or equivalent or consent of instructor. Basic concepts of micro and welfare economics: partial and general equilibrium. Industrial organization: monopolistic competition, vertical integration, price discrimination, and oligopoly; parameter estimation and policy. (F) Zilberman

202. Issues and Concepts in Agricultural Economics. (4) Three hours of lecture and one hour of discussion per week. Prerequisites: Economics 201A or equivalent or consent of instructor. This is an introduction to probability theory and statistical inference. It is primarily intended to prepare students for the graduate econometrics courses 212 and 213. The emphasis of the course is on the principles of statistical reasoning. Probability theory will be discussed primarily as a background for statistical theory and specific models will, for the most part, be considered under the general rubric of statistical theory as it is developed. (F) LaFrance

211. Mathematical Methods for Agricultural and Resource Economists. (4) Four hours of lecture and one hour of discussion per week. Prerequisites: Consent of instructor. The goal of this course is to provide students with the basic skills required to perform effectively in the graduate program and as professional economists. The lectures place heavy emphasis on intuition, graphical representations, and conceptual understanding. The problem sets provide the opportunity to master mechanical skills and computational techniques. Topics covered include real analysis, linear algebra, multivariable calculus, theory of static constrained optimization, and comparative statics. (F) Simon

212. Econometrics: Multiple Equation Estimation. (4) Four hours of lecture and one hour of discussion per week. Prerequisites: 211 or consent of instructor. Introduction to the estimation and testing of econometric models. Topics include asymptotic model, economic theory, instrumental variable, and the generalized method of moments. In addition, a survey of time series analysis, limited dependent variables. (SP)

213. Applied Econometrics. (4) Three hours of lecture and one hour of computer laboratory per week. Prerequisites: 211 and 212 or equivalent or consent of instructor. Standard and advanced econometric techniques are applied to topics in agriculture and resource economics. Techniques include limited dependent variables, panel data, binary, and other new applications to economic problems will be emphasized. Students will use computers to conduct statistical analyses. (F)

214. New Econometric and Statistical Techniques. (4) Three hours of lecture and three hours of computer lab per week. Prerequisites: 211, 213 or equivalent or consent of instructor. Techniques for preparing, analyzing and interpreting new and emerging approaches to estimation and inference. Bayesian, maximum entropy, and other new applications to economic problems will be emphasized. Students will use computers to conduct statistical analyses. (SP)

192A-192B. Econometric Project Workshop. (2,2) Two hours of seminar per week. 192A must be taken for a letter grade. 192B must be taken for a letter grade. Prerequisites: 210, 211, and 212 or consent of instructor. Techniques for preparing econometric studies, including finding data sources, the reporting of results, and standards for placing research questions with existent literature. With faculty guidance, students prepare and present economic projects, present projects to the class, provide comments on other student projects, and revise projects in response to faculty and student comments. (F,SP) Auffhammer, Sadoff


232. Empirical International Trade and Investment. (2) Two hours of lecture per week for eight weeks. Prerequisites: Consent of instructor. Empirical aspects on
239. Markets and Trade Workshop. (1) Course may be repeated for credit. Two hours of seminar per week. Must be taken on a satisfactory/unsatisfactory basis. Prerequisites: Consent of instructor. Presentation and discussion of ongoing research by faculty, staff, and students. Not necessarily offered every semester. (F,SP)

241. Economics and Policy of Production, Technology and Risk in Agricultural and Natural Resources. (3) Three hours of lecture per week. Prerequisites: 201 and 202, or Economics 2014-2018, or consent of instructor. This course covers alternative models of production, resource and environmental risk management; family production function; adoption and diffusion; innovation and intellectual property rights; agricultural and environmental policies and their impact on production and the environment; water resources; pest control; biotechnology; and optimal control over space and time. (F) Zilberman

242. Quantitative Policy Analysis. (3) Three hours of lecture per week and 2 hours of research per unit. Consent of instructor. Production versus predatory government behavior, rent seeking, social waste, and their trade-offs with the provision of growth-promoting public goods. Three, failure, judgement, misallocation, government involvement, and organizational. The roles of public versus special interests are modeled to determine degree and extent of organizational failures in collective group behavior. Alternative frameworks are used to evaluate various types of policy reform. (SP)

249. Agricultural, Food, and Resource Policy Workshop. (1) Course may be repeated for credit. Two hours of seminar per week. Must be taken on a satisfactory/unsatisfactory basis. Prerequisites: Consent of instructor. Analysis of policy issues in agricultural development using sectoral and regional models of growth and development. (SP)

C251. Microeconomics of Development. (3) Three hours of lecture per week. Prerequisites: Consent of instructor. Theoretical and empirical analyses of poverty and inequality, household and community behavior, and contract and institutions in the context of developing countries. Also listed as Economics C270A. (F) Sadoulet

252. Sectoral and Regional Planning in Economic Development. (3) Three hours of lecture per week. Prerequisites: Consent of instructor. Analysis of policy issues in agricultural development using sectoral and regional models of growth and development. (SP)

C253. International Economic Development Policy. (3) Three hours of lecture per week. Prerequisites: Minimum one semester graduate-level microeconomics and consent of instructor. This course emphasizes the development and application of policy solutions to developing-world problems related to poverty, macroeconomic policy, and environmental sustainability. Topics include statistical, econometric, and policy analysis and are applied to a series of case studies. The course is designed to develop practical professional skills for application in the international arena. Also listed as Public Policy C253. (F) De Janvry. Siddiqui resources as trade models of renewable and nonrenewable natural resource use, with applications to forests, fisheries, energy, and climate change. Resources, growth, and sustainability. Economic analysis of environmental policy. Extremities; the Coasian critique; tax incidence and anomalies; indirect taxes; the double dividend; environmental standards; environmental regulation; impact of uncertainty on tax and standards; mechanism design; monitoring, penalties, and regulatory strategy; emissions markets. (F) Fisher

262. Non-market Valuation. (3) Three hours of lecture per week. Prerequisites: Ph.D.-level economic theory or consent of instructor. The economic concept of value: historical evolution of market and non-market valuation; revealed preference methods: single site demand, multi-site demand, corner solution models, and valuation of quality changes; averaging behavior; the hedonic method; contingent valuation; other stated preference methods: ranking, choice, conjoint analysis; the value of life and safety; sampling and questionnaire design for valuation surveys. (SP) Hanemann

263. Dynamic Methods in Environmental and Resource Economics. (3) Three hours of lecture per week. Prerequisites: Ph.D.-level economic theory or consent of instructor. This course studies methods of analysis and optimal control of dynamic systems, emphasizing applications in environmental and natural resource economics. Continuous-time deterministic models are studied using phase plane analysis, the calculus of variations, the Maximum Principle, and dynamic programming. Numerical methods are applied to discrete stochastic and dynamic deterministic models. (F) Karp

269. Natural Resource Economics Workshop. (1) Course may be repeated for credit. Two hours of seminar per week. Must be taken on a satisfactory/unsatisfactory basis. Prerequisites: Consent of instructor. Presentation and discussion of ongoing research by faculty, staff, and students. Not necessarily offered every semester. (F,SP)

298. Special Study for Graduate Students. (1-6) Course may be repeated for credit. Individual study. Prerequisites: Consent of instructor. All properly qualified graduate students who wish to pursue a special field of study may do so if their proposed program of study is acceptable to the member here of the staff with whom they work. (F,SP)

299. Individual Research. (1-12) Course may be repeated for credit. Approximately four hours of research per week per unit. Must be taken on a satisfactory/unsatisfactory basis. Prerequisites: Graduate standing and consent of instructor. (F,SP)

602. Individual Study for Doctoral Students. (1-12) Course may be repeated for credit. Individual study. Must be taken on a satisfactory/unsatisfactory basis. Individual study in consultation with the major field adviser, intended to provide an opportunity for qualified students to prepare themselves for the various examinations required for candidates of the Ph.D. May not be used for unit or residence requirements for the doctoral degree. (F,SP)

Professional Courses

300. Professional Preparation: Teaching of Environmental Economics and Policy. (1-6) Course may be repeated for credit. Four hours of work per week per unit. Must be taken on a satisfactory/unsatisfactory basis. Prerequisites: Graduate standing, appointment as a graduate student instructor, or consent of instructor. Discussion, problem review and development, guidance of discussion classes, course development, supervision of teaching. (F,SP)

400. Professional Training in Research Methodology. (1-6) Course may be repeated for credit. Individual research. Must be taken on a satisfactory/unsatisfactory basis. Prerequisites: Graduate student researcher appointment. Individual training for graduate student planning and performing research under the supervision of a faculty adviser, intended to provide academic credit for the experience obtained while holding a research assistantship. (F,SP)

259. Rural Economic Development Workshop. (1) Course may be repeated for credit. Two hours of seminar per week. Must be taken on a satisfactory/unsatisfactory basis. Prerequisites: Consent of instructor. Presentation and discussion of ongoing research by faculty, staff and students. Not necessarily offered every semester. (F,SP)

261. Environmental and Resource Economics. (3) Three hours of lecture per week. Prerequisites: Ph.D.-level economic theory or consent of instructor. Theory
of American Studies 10, Introduction to American Studies (4 units), plus three courses from the following list of courses, with no more than two courses from any one department.

**Note:** This list is subject to annual review and revision. New courses, particularly those that fulfill the American Cultures requirement, can be substituted for those on the list with adviser approval. Transfer students should check with an AS adviser to have their transferred courses approved to fulfill this requirement.

**Lower Division Course List:**
- African Am Studies 5A, 5B, 17AC, 27AC; Agricultural and Natural Resources Economics 1; American Studies 39; Anthropology 2, 10AC, 11AC; Art 8; Asian Am Studies 2A, 2B, 20A, 20B, 20C; UGGB 10A; Chicano/Latino Studies 40, 50, 70, 80; Comparative Literature 60AC; Education 40AC; English 31AC, 33, 37; Environmental Design 4; ESPM 10, 11, 50AC; Environmental Sciences 10; Ethnic Studies 21AC, 41AC; Film 25A, 25B, 40AC; Gender and Women’s Studies 14, 20, 20W; Geography 20, 50AC, 70AC; History 7A, 7B, 16AC, 17A, 30B; IDS 1; ISF 60, 61; Linguistics 55AC; Mass Comm 10; Military Affairs 2; Music 26AC; Native Am Studies 20A, 71, 72, 90; Poli Sci 1, 33AC; Public Health 14; Rhetoric 40AC, 41AC; Sociology 1, 3, 3AC, 5; Theatre, Dance, and Performance Studies 25AC.

**Upper Division Requirements:** 30-36 units distributed among the following:

1. **Core Methods Courses.** (8 units) Students are required to take one course each from the two methods sequences: examining U.S. cultures in time and space, and “Examining U.S. Cultures in Place.”

2. **Area of Concentration.** At least 20 units of upper division coursework drawn from the College of Letters and Science and the professional schools and colleges, in the student’s individually articulated area of concentration. Areas of concentration may be highly individualized, depending on the student’s intellectual focus, prior preparation, and the availability of courses. Therefore, students planning to declare the major should meet with a faculty adviser early in their junior year, at the latest, to plan their upper division program. Subsequently, this program can be revised only with the approval of the faculty adviser.

3. **Thesis Requirement.** All majors are required to satisfy a senior thesis requirement in American Studies in which they write a substantial research paper.

4. **Historical Requirement.** One of the courses taken to complete the American studies major (either upper or lower division) must focus on U.S. history, culture, and/or politics before 1900. Students should check with an American studies student affairs officer to ensure that the course they take meets this requirement.

**Honors Program.** Students who wish to be eligible to graduate with honors must enroll in American Studies H195. For admission to H195, students must have senior standing, an overall grade-point average of 3.51, and a grade-point average of 3.65 in the major.

**For further information, please contact the student affairs officer at 301 Campbell Hall, (510) 642-9320.**

**Lower Division Courses**

10. **Introduction to American Studies.** (4) Three to four hours of lecture and zero to one hour of discussion per week. This course is designed to introduce honored students (those who have achieved a minimum overall GPA of 3.3) to the history and theory of an interdisciplinary field and to explore current themes, debates, and research problems in American studies. Credit or no credit. Topics may vary from semester to semester. This course satisfies the American Cultures requirement.

24. **Freshman Seminar.** (1) Course may be repeated for credit as topic varies. One hour of seminar per week.

39. **Freshman/Sophomore Seminar.** Course may be repeated for credit as topic varies. Two to four hours of seminar per week. Sections 1-2 to be graded on a letter-grade basis. Sections 3-4 to be graded on a passed/not passed basis. Freshman and sophomore seminars offer lower division students the opportunity to explore with a faculty member and a group of peers in a small-seminar setting. These seminars are offered in all campus departments; topics vary from department to department and from semester to semester. Enrollmen limits are set by the faculty, but the suggested limit is 25.

84. **Sophomore Seminar.** (1,2) Course may be repeated for credit as topic varies. One hour of seminar per week per unit for fifteen weeks. One and one half hours of seminar per week per unit for ten weeks. Two and one half hours of seminar per week for eight weeks. Three hours of seminar per week per unit for fifteen weeks. One and one half hours of seminar per week per unit for ten weeks. Two and one half hours of seminar per week for eight weeks. Three hours of seminar per week per unit for five weeks. Sections 1-2 to be graded on a passed/not passed basis. Sections 3-4 to be graded on a letter-grade basis. Prerequisites: At discretion of instructor. Sophomore seminars are small interactive courses offered by faculty members in departments across the campus. Sophomore seminars offer opportunity for close, regular intellectual contact between faculty members and students in the crucial second year. The topics vary from department to department and semester to semester. Enrollment limited to 15 sophomores.

98. **Directed Group Study.** (1-4) Course may be repeated for credit as topic varies. Group meetings to be arranged. Must be taken on a passed/not passed basis. Prerequisites: Open only to freshmen and sophomores. Consent of instructor. Written proposal must be approved by sponsoring faculty. Seminars for the group study of selected topics, which will vary from year to year. Topics may be initiated by students. Staff.

101. **Examining U.S. Cultures in Time.** (4) Course may be repeated for credit. Three to four hours of lecture and zero to one hour of discussion per week. This course examines how U.S. cultures are constructed, reinforced, and changed—particularly in reference to place and material culture. Qualitative and quantitative methods of analysis drawn from several disciplines will help students develop skills in cultural interpretation. Case studies may focus on a neighborhood, a city, or a region. Topics will vary from semester to semester. This course satisfies the American Cultures requirement.

102. **Examining U.S. Cultures in Space.** (4) Course may be repeated for credit as topic varies. Three to four hours of lecture per week. This course examines how U.S. cultures are constructed, reinforced, and changed—particularly in reference to place and material culture. Qualitative and quantitative methods of analysis drawn from several disciplines will help students develop skills in cultural interpretation. Case studies may focus on a neighborhood, a city, or a region. Topics will vary from semester to semester. This course satisfies the American Cultures requirement.
C111F. Cycles of U.S. Imperialism: Spanish-American War of 1898. (4) Three hours of lecture and one hour of discussion per week. Formerly C169B. This course surveys the history of American imperialism in the governance and economic development of the Spanish-American War of 1898. The course will also discuss the role of information technology in the governance and economic development of the Spanish-American War of 1898. The course will also discuss the role of information technology in the governance and economic development of business. Included will be discussions of the evolution of the large corporation, the development of modern management techniques, and the changing relationship between business, government, and labor. Also listed as Undergraduate Administration C172. (F,SP) Mozingo

C172. Business in Its Historical Environment. (3) Three hours of lecture per week. This course will examine selected aspects of the history of American business. The course will also discuss the role of information technology in the governance and economic development of business.

C174. Visual Autobiography. (4) Six hours of lecture per week. Prerequisites: Consent of instructor. Since visual and literary studies have historically been viewed as separate disciplines, we will use theories from both to study those forms of self-representation that defy disciplinary boundaries, or what we call “visual autobiography.” The course aims to help students become conversant with the elements of alphabetic literacy (reading and writing) and visual literacy (observing and making) in order to develop a third distinctive textual/visual literacy. Also listed as Visual Studies C185A, Undergraduate Interdisciplinary Studies C135, and English C143V. This course satisfies the American Cultures requirement.

C112A. American Cultural Landscapes, 1600 to Present. (4) Three hours of lecture and one hour of discussion per week. Formerly C169B. Introduces ways of seeing and interpreting American histories and cultures, as revealed in everyday built surroundings—homes, houses, stores, recreation areas, small towns, city districts, and regions. Encourages students to read landscapes as records of past and present social relations and to speculate for themselves about cultural meaning. Also listed as Environmental Design C169A and Geography C166B. (SP) Groth

C112F. The American Forest: Its Ecology, History, and Representation. (4) Three hours of lecture and one hour of discussion per week. Formerly C176. The American Forest: Its Ecology, History, and Representation is offered in terms of its ecology, history, and representations in paintings, photographs, and literary essays. This examination seeks to understand the American forest in its scientific and economic parameters, as well as the historic, social, and ideological dimensions which have contributed to the evolution of our present attitudes toward the forest. Also listed as Undergraduate Interdisciplinary Studies C136, History of Art C189, and Environ Sci. Policy, and Management C191. (F,SP) Lovell, McBride

C132B. Intellectual History of the United States. (4) Students will receive no credit for C132B after taking History 132B. Three hours of lecture and one hour of discussion per week. History C132B.

C134. Information Technology and Society. (4) Students will receive no credit for C134 after taking Information Technology and Society. American Studies C134. Three hours of lecture per week. This course assesses the role of information technology in the digitalization of society by focusing on the development of e-government, e-commerce, e-learning, the digital city, telecommuting, virtual communities, internet time, the virtual office, and the geography of cyberspace. The course will also discuss the role of information technology in the governance and economic development of society. Also listed as Undergraduate Interdisciplinary Studies C134. (F,SP) Laguerre

C160. International Media. (3) Course may be repeated for credit as topic varies. Three hours of lecture per week. Prerequisites: Mass Communications 10 or consent of instructor. Case studies of the foreign mass media. Focus may be on the press and publishing, broadcasting, documentaries, or new media. Possible topics: Pacific Rim press; mass media in China; Israeli and Palestinian media. Also listed as Interdisciplinary Studies Field Maj C126 and Mass Communications C160.

C171. The American Designed Landscape Since 1850. (3) Three hours of lecture per week. This course surveys the history of American landscape architecture since 1850 and urban open space—what is squares, plazas, parks, and recreation systems; 2) urban and suburban design; 3) regional and environmental planning; 4) gardens. The course will review the cultural and social contexts which have shaped and informed landscape architecture in the United States since the advent of the public parks movement, as well as the role of landscape architecture in urban planning, historical preservation, and conservation. The course will also discuss the role of information technology in the governance and economic development of business and the political economy of land use. Also listed as Geography C166B and Landscape Architecture C169A.

C190. Senior Seminar. (4) Four hours of seminar per week. Prerequisites: Declared majors with senior standing. Students will meet in seminar and will be required to write individual research papers based on the general themes or issues of the seminar. The particular themes issues of the seminar will be determined at the beginning of the semester. Also listed as African American Studies C134. (F,SP) Laguerre

H195. Honors Thesis. (3) Three hours of seminar per week. Prerequisites: Senior-standing major in American studies; completion of 101 and 102, 3.51 overall GPA, and 3.65 GPA for classes in the major. The completed thesis will be read by the thesis supervisor and one other faculty member. (F,SP) Staff

198. Directed Group Study for Advanced Undergraduates. (1-4) Course may be repeated for credit as topics vary. Enrollment is restricted; see the Introduction to Courses and Curricula section of this catalog. Must be taken on a passed/not passed basis. Prerequisites: Corequisites: Registration by the College of Letters and Science. Students are required to submit a proposal for a group study. The group study must be approved by the director of the program and the director of the group study. The group study may be repeated for credit as topics vary. Must be taken on a passed/not passed basis. Directed individual study on special topics approved by an American studies faculty member. Enrollment restrictions apply. (F,SP) Staff
The Major

There is no undergraduate major.

The Graduate Program

The Ancient History and Mediterranean Archaeology program is interdisciplinary and is administered by faculty group drawn from different departments. Both M.A. and Ph.D. degrees are offered. Fields of emphasis include ancient Near East, Egypt, Ancient Greek, and Latinate history, art, and archaeology; epigraphy; numismatics; and ancient law. Candidates for degrees will offer a combination of three of these fields or similar fields, one as a major subject, two as minor subjects. The program is open to students with the B.A. in a relevant area who have completed at least one year of undergraduate study in ancient history, art, or archaeology. Applicants should have sufficient training to undertake advanced work in at least one ancient language.

M.A. Requirements. The M.A. by examination requires 20 semester units of coursework and a thesis. The M.A. by examination requires 24 semester units of coursework and a comprehensive examination in the area of principal specialization. All M.A. candidates must pass an examination in at least one (normally modern) language before the degree is awarded. Each student’s progress is monitored by a three-person advisory committee. Students are expected to complete requirements for the M.A. within two years after admission. Successful completion of the M.A. does not carry with it automatic admission into the Ph.D. program. Students must petition the faculty and obtain its approval before continuing for the Ph.D.

Ph.D. Requirements. There are no specific course requirements, but it is expected that all students will take at least one AHMA interdepartmental seminar during their graduate years. Students should also take considerable seminar work in at least two of the interdepartmental seminars represented in the program and obtain some practical experience in archaeology. Candidates must pass examinations in two modern languages and two ancient languages appropriate to the area of principal specialization. The student proceeds to research and writing of a dissertation under the guidance of a three-person committee. The dissertation must be approved by the committee and be in a final form before the student is recommended for the Ph.D. degree. For further information, inquiries should be addressed to the Graduate Group in Ancient History and Mediterranean Archaeology.

Graduate Courses

210. Ancient History and Mediterranean Archaeology Interdisciplinary Seminar. (2,4) Course may be repeated for credit. Three hours of seminar per week. Prerequisites: Graduate standing. Team taught by faculty from two different departments. The purpose is not only to expose students to a discipline other than their own, but also to engage them directly in the application of that discipline to the current research projects. The topic and instructors will vary from year to year. Staff.

299. Special Study. (1-4) Course may be repeated for credit. Four hours of independent study per week per unit, including consultation. Prerequisites: Graduate standing or consent of instructor. Topics and instructors will vary from year to year. Special individual study for qualified graduate students. Individual study and research, including archival fieldwork or laboratory projects, in consultation with instructor on subject matter not covered in scheduled course offerings. (F,SP) Staff.

Anthropology

(College of Letters and Science)

Department Office: 232 Kroeber Hall, (510) 642-3391

Professors

Stanley H. Brandes, Ph.D. University of California, Berkeley. Psychology, social anthropology, politics, political economy, gender, citizenship, and the state, race, and violence.

Charles L. Briggs (The Alan Dundes Distinguished Professor in Folklore, Emeritus). Linguistics and medical anthropology, social theory, modernity, citizenship and the state, race, and violence.

Margaret W. Conkey (The Class of 1960 Chair for Distinguished Teaching). Ph.D. University of Chicago. Anthropology, archaeology, Near Eastern, and ancient Greek, cultural anthropology, and medical anthropology, social theory, modernity, citizenship and the state, race, and violence.

Nelson H. Graburn and Thomas Garden Barnes Chair of Canadian Studies (Emeritus), Ph.D. University of Chicago. Kinship, art, tourism, circumpolar, Japan.

William F. Hanks (The Distinguished Chair in Linguistic Anthropology). Ph.D. University of Chicago. Maya culture, language in performance, philosophy of language, and communication, shamanism, the logic of anthropological inquiry, anthropology of literature.


Kathryn Bassett (The Distinguished Chair in Linguistic Anthropology). Ph.D. University of Chicago. Anthropology, archaeology, Near Eastern, and ancient Greek, cultural anthropology, and medical anthropology, social theory, modernity, citizenship and the state, race, and violence.


Associate Professors

Brent Berlin, Ph.D. University of California, Los Angeles. Ethnolinguistics, language and performance, Islam and the Middle East.


Jack M. Potter (Emeritus). Ph.D. University of California, Berkeley, U.S., China, S.E. Asia, peasants, theory.


Affiliated Faculty

Genevieve Ames, Ph.D. Medical Anthropology, occupational culture and health, substance abuse prevention. (Public Health)

Phyllis Bourgois, Ph.D. Inner-city social suffering, substance abuse, HIV prevention. (Anthropology, History, and Social Science)

Susan Ervin-Tripp, Ph.D. Sociolinguistics, child language development. (Psychology)

Mia Fuller, Ph.D. Anthropology of colonialism, feminism. (Italian Studies)

Jill Dempsey, Ph.D. Medical anthropology, social movements, alcohol and drug use. (Public Health)

Jennifer Johnson-Calder, Ph.D. Sexuality and reproduction. (Demography)

Michel Laguerre, Ph.D. Contemporary social theory, transnational citizenship. (Sociology)

Carol Stack, Ph.D. Social anthropology, comparative family analysis. (Demography)

Timothy White, Ph.D. Physical anthropology, evolutionary studies. (Integrative Biology)

Affiliated Researchers

Ina Jackins, Ph.D. Museology, visual anthropology (Phoebe A. Hearst Museum of Anthropology)

Barbara Vayav, Ph.D. Sociology, ethnic studies. (Institute of Slavic, East European, and Eurasian Studies)

Medical Anthropology Ph.D. Program Office: 232 Kroeber Hall, (510) 642-3381

Professors

Stanley Brandes, Ph.D.

Charles L. Briggs, Ph.D.

Paul Rablown, Ph.D.

Nancy Scheper-Hughes, Ph.D.

Associate Professors

Lawrence Cohen, Ph.D. Harvard University. Medical anthropology, sexuality, gerontology, religion, South Asia.


Saba Mahmood, Ph.D. Stanford University. Anthropology of subject formation, liberation, and secular modernity (Psychology)

Elizabeth Colson, Ph.D. University of California, Los Angeles. Ecology, development, medical, anthropology, social migration, politics, religion, Africa.

Michel Laguerre, Ph.D. Contemporary social theory, transnational citizenship. (Sociology)

Carol Stack, Ph.D. Social anthropology, comparative family analysis. (Demography)

Timothy White, Ph.D. Physical anthropology, evolutionary studies. (Integrative Biology)

*Professor of the Graduate School

†Recipient of Distinguished Teaching Award

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Courses in the department offer knowledge of social and cultural aspects of behavior, as well as the physical nature of humans. Lower division courses are intended to give a general understanding of human evolution, prehistory, and the nature of human cultures, while upper division courses elaborate particular themes.

The anthropology major is designed to serve two purposes: to provide a general education in anthropology for students who are pursuing a liberal arts education, and to provide preparation for graduate work for students who wish to become professional anthropologists. Students who do not intend to do graduate work in anthropology may plan their program with considerable freedom, so long as they fulfill the requirements of the major listed below. Students who plan to go on to graduate study, either at another institution or the University of California, Berkeley, should select a combination of courses to form a unified plan of study that meets special intellectual interests.

The collections and research facilities of the Phoebe A. Hearst Museum of Anthropology are available for study in archaeology, ethnography, physical anthropology, and related subjects by graduate and undergraduate students, and by visiting scholars; the museum’s exhibition hall is used for instructional and educational purposes, particularly in connection with class work. Those interested may address the Director, 103 Kroeber Hall. For further information on the Hearst Museum, see the Index.

The Anthropology Library, 230 Kroeber Hall, is part of the campus library system. It contains nearly 70,000 bound volumes and receives 965 current serial titles. The Anthropology Library houses a large reading room and facilities for reading microfilm. It is open to all members of the University but serves primarily the faculty and students of the Anthropology Department.

Students seeking information on the Undergraduate Program may inquire at 209 Kroeber Hall. Students seeking information on the Graduate Program may inquire at 205 Kroeber Hall.

The Major

Lower Division Prerequisites: Anthropology 1, 2 or 2AC, and 3 or 3AC.

Upper Division Requirements: A total of nine upper division courses is required.

Anthropology 114
One course in biological anthropology (courses 100-112, 127)
One course in archaeology (courses 121-126, 174AC)
One course in social/cultural anthropology (courses 115-119, 138-189)
Five other elective anthropology courses.

The above nine courses must include at least one “area” course (121-124, 128A, 170-188, 189A), and one “method” course (127, 128M, 131-136, 138B, 169A, 169B, 189M). For example, Anthropology 123D, Archaeology of East Asia, is an area course that is also upper division archaeology. Method courses must be taken for a minimum of 4 units. Summer field courses, when sponsored or endorsed by a Berkeley professor of anthropology, satisfy the method requirement.

All courses must be taken on a letter-graded basis with the exception of Anthropology 190, Independent Study, if sponsored and evaluated by a professor of anthropology. Transfer students should attempt to satisfy prerequisites before transferring to Berkeley. They may declare when they have completed two of the prerequisites.

Honors Program. The Honors Program in anthropology is an independently pursued course of research undertaken by qualified students under the mentorship of a faculty thesis adviser. A grade-point average of 3.3 overall, and 3.5 in the major in courses completed at Berkeley is required to qualify for the program. It is a year-long senior program which may begin in either the fall or spring semester. The program requires the sponsorship of an anthropology professor as thesis adviser and a second reader. The honors courses, H195A and H195B, may also count as elective requirements for the major. Applications and more information are available at 209 Kroeber Hall.

The Minor

Lower Division. Choose two from Anthropology 1, 2/2AC, or 3/3AC.

Upper Division. Any five anthropology courses. All courses must be taken for a letter grade, and the student must achieve a C average in all anthropology coursework. At least four of the five courses must be completed at Berkeley. For more information about the minor, please contact the undergraduate adviser in 209 Kroeber Hall.

Preparation for Graduate Study

Admission to graduate studies at Berkeley does not presuppose a B.A. in anthropology. The graduate program is oriented toward the doctorate, and only candidates for the Ph.D. will be accepted. The M.A. degree is available in the course of study leading to the doctorate.

Because of the number of students who wish advanced training, only a small percentage of applicants can be accepted. Applications are considered only once a year for the following fall semester. The deadline for application is December 15.

Graduate Programs

Anthropology Ph.D. Program

The Department of Anthropology offers a Ph.D. in anthropology, with the subdisciplines of social-cultural anthropology or archaeology. The Ph.D. in anthropology is concerned with diverse analytic and substantive problems in the contemporary world and includes research sites across the United States and around the world. For example, the Ph.D. in anthropology might focus on globalization and political economy; gender and feminist analysis in archaeology and social-cultural anthropology; genomics and the anthropology of science and reason; folkloristic inquiry; ethnographic and linguistic anthropology; paleo-ethnobotany; the anthropologies of tourism, food, energy, space, and the body; sexuality and difference; aging and the life course; cultural politics of identity, space, and the body; political ecology and agrarian micropolitics; coastal archaeology; urban anthropology and psychoanalytic anthropology.

The program for the Ph.D. degree normally takes six years and is divided into three steps, as follows:

Step I. The students begin to narrow down their interests to particular topical and geographical fields of specialization, a process that normally takes one year.

Step II. Students attend seminars, prepare three field statements in their specializations, satisfy their language requirement, and prepare for their Ph.D. oral qualifying examination. This step lasts one to two years. With the successful passing of the oral exams, students are advanced to candidacy for the Ph.D. degree.

Step III. Students undertake research for the Ph.D. dissertation under a three-person committee in charge of their research and dissertation. Students do original field, laboratory, or library research, which generally takes a minimum of one year. The students then write the dissertation based on the results of this research. On completion of the research and approval of the dissertation by the committee, the students are awarded the doctorate.

For further information, please address correspondence to the Graduate Adviser, Department of Anthropology, University of California, Berkeley; Berkeley, CA 94720.

Medical Anthropology Ph.D. Program

General Information. The Department of Anthropology of the University of California, Berkeley, and the Graduate Group in Anthropology at the University of California at San Francisco, currently offers joint Ph.D. in medical anthropology. Students may apply to enter the program through either the Berkeley or the San Francisco campus but not both. The point of entry determines the student’s home base during the program. Financial aid, primary advising, and most of the services are provided by the campus through which the student enters the program. All students, however, benefit by taking required coursework on both campuses and by the participation of the faculty on both sides of the program in all qualifying examinations and on the doctoral dissertation committees. The degree is the same and bears the name of both campuses.

Medical Anthropology. Medical anthropology entails the exploration of humans as simultaneously physical and symbolic beings in both contemporary and evolutionary contexts. As such, medical anthropology participates in anthropology as a whole, encompassing theory and analysis of cultural, psychological, biological, biocultural, symbolic, and linguistic anthropology. It is concerned with questions of both theoretical and applied significance, and with research that is of relevance to the social sciences as well as to medicine and the biological sciences. Courses in bioevolutionary dimensions of disease are accompanied by seminars that explore pain, suffering, madness, and other human afflictions as a social language speaking to the critically sensitive or contradictory aspects of culture and social relations. Anthropological epidemiology asks the questions, “Who gets sick with what ailsments?” (differential risks, forms of medical knowledge, and medical systems) and “Why?” (what social arrangements, cultural features, and biotechno-environmental forces account for these risks). Medical anthropology interprets individuals as actively constructing their medical realities and not simply adjusting to or coping with them.

Given the broad definition of medical anthropology, the joint graduate program at Berkeley-UCSF is extremely flexible, allowing for the individual needs and interests of each student. During the first year of training, students are required to take core courses in both sociocultural and biocultural aspects of medical anthropology, taught at both campuses. After the first year and successful completion of the preliminary qualifying examination, medical anthropology students develop a more specialized and individually tailored program under the supervision and guidance of their adviser.

For students entering Berkeley with a B.A., the doctoral program is estimated to take between five and six years, as follows: three years of coursework leading to two years of dissertation research, and one to two years of writing the dissertation.

For a complete list of faculty, consult the Medical Anthropology brochure available from the Program Office, 232 Kroeber Hall, Berkeley, CA 94720-3710, or the General Catalog of UCB and UCSF campuses.

Applications to all graduate programs are considered once each year for admission the following fall semester. The application period opens in early September, and the deadline for receipt of both departmental and Graduate Division applications is December 15. Applications are screened by the anthropology faculty, and selections are made on the basis of academic excellence, letters of recom-
mendation, GRE scores, relevant experience, and a strong statement of intellectual and professional purpose.

The minimum requirement for admission to the Berkeley doctoral program in anthropology and in medical anthropology is a B.A. The UCSF program in medical anthropology requires a master's degree in anthropology or a related discipline, or a post-baccalaureate professional degree.

The Master of Arts in Folklore

The folklore program is designed to provide graduate students with a competent knowledge of both the materials of folklore and the various methods of studying these materials.

For information, see the Folklore section of this catalog.

Lower Division Courses

1. Introduction to Biological Anthropology. (4) Three hours of lecture and one hour of discussion per week. An introduction to human evolution. Physical and behavioral adaptations of humans and their prehistoric and living relatives. Issues in evolutionary theory, molecular evolution, primate behavior, interpretation of fossils. Prehistoric activities, racial differences, genetic components of behavior are defined and evaluated. (F,SP), Staff

2. Introduction to Archaeology. (4) Students will receive no credit for 2AC after taking 2 but may remove a deficiency grade. Three hours of lecture and one hour of discussion per week. Prehistory and cultural growth.

Introduction to the methods, goals, and theoretical concepts of archaeology with attention to the impact archaeology has had on the construction of the historical narratives of diverse communities—Native Americans, Hispanics, and Euro-Americans. It fulfills the requirements for 2. This course satisfies the American Cultures requirement. (F,SP)

2AC. Introduction to Archaeology. (4) Students will receive no credit for 2AC after taking 2 but may remove a deficiency grade. Three hours of lecture and one hour of discussion per week. Prehistory and cultural growth.

Introduction to the methods, goals, and theoretical concepts of archaeology with attention to the impact archaeology has had on the construction of the historical narratives of diverse communities—Native Americans, Hispanics, and Euro-Americans. It fulfills the requirements for 2. This course satisfies the American Cultures requirement. (F,SP)

3. Introduction to Social and Cultural Anthropology. (4) Three hours of lecture and one hour of discussion per week. The structure and dynamics of human culture and social institutions. (F,SP)

3AC. Introduction to Social/Cultural Anthropology (American Cultures). (4) Three hours of lecture and one hour of discussion per week. The structure and dynamics of human cultures and social institutions from a comparative perspective with special attention to American Cultures and their contexts. Course will illustrate principles presented in the course. It fulfills the requirements for 3. This course satisfies the American Cultures requirement. (F,SP)

24. Freshman Seminar. (1) Course may be repeated for credit with different topic and different instructor. Fifteen hours of seminar per semester. Sections 1-10 to be graded on a passed/not passed basis. Freshman seminar program has been designed to provide new students with the opportunity to explore an intellectual topic in significant depth in a small seminar setting. Freshman seminars are offered in all campus departments, and topics may vary from department to department and semester to semester. Enrollment limited to 20.

39. Freshman/Sophomore Seminar. (2-4) Course may be repeated for credit when topic changes. One hour of lecture per unit. Sections 1-2 to be graded on a letter-grade basis. Sections 3-4 to be graded on a passed/not passed basis. Freshman and sophomore seminars offer lower division students the opportunity to explore an intellectual topic with a faculty member and a group of their peers. These seminars are offered in all campus departments; topics vary from department to department and from semester to semester.

84. Sophomore Seminar. (1,2) Course may be repeated for credit as topic varies. One hour of seminar per week for one year. One and one half hours of seminar per week per unit for 10 weeks. Two hours of seminar per week per unit for eight weeks.

Three hours of seminar per week per unit for five weeks. Sections 3-4 to be graded on a passed/not passed basis. Sections 3-4 to be graded on a letter-grade basis. Prerequisites: At discretion of instructor. Sophomore seminars are small interactive courses offered by faculty members across the campus. Sophomore seminars offer opportunity for close, regular intellectual contact between faculty members and students in the crucial second year. The topics vary from department to department and semester to semester. Enrollment limited to 15 sophomores. (F,SP)

98. Directed Group Study. (1-4) Course may be repeated for credit. Enrollment is restricted; see the Introduction to Courses and Curriculums section of this catalog. Three hours of group study (or tutorial or fieldwork) per week. Must be taken on a passed/not passed basis. Prerequisites: Consent of instructor; freshmen or sophomore status. Organized group study on topics selected by students under the sponsorship and direction of a member of the Anthropology Department's faculty.

99. Supervised Independent Study and Research. (1-4) Course may be repeated for credit. Enrollment is restricted; see the Introduction to Courses and Curriculums section of this catalog. Three hours of group study (or tutorial or fieldwork) per week. Must be taken on a passed/not passed basis. Prerequisites: Consent of instructor; freshmen and sophomores only. Individual research by lower division students. (F,SP)

Upper Division Courses

Physical Anthropology

C100. Human Paleontology. (5) Three hours of lecture and three hours of laboratory per week. Prerequisites: 1, Biology 1A-1B. Origin and relationships of the extinct forms of mankind. Also listed as Integrative Biology C185. (SP), White

101. Genetic Anthropology. (4) Three hours of lecture and one hour of discussion per week. Prerequisites: 1. Human variation in both a racial and non-racial context; basic genetics (both molecular and population); theoretical aspects; selective bases of human variation. (F,SP), Staff

C103. Introduction to Human Osteology. (6) Six hours of lecture and fourteen hours of laboratory per week. Prerequisites: 1, Biology 1B. An intensive study of the human skeleton, reconstruction of individual and population characteristics, emphasizing methodology and analysis of human populations from archaeological and paleontological contexts, taphonomy, and palaeopathology. Also listed as Integrative Biology C142.

105. Primate Evolution. (4) Three hours of lecture per week. Prerequisites: 1 recommended. An intensive study of the primate orders in a comparative perspective, and an examination of the roots of modern human behavior. (F,SP), Staff

111. Evolution of Human Behavior. (4) Three hours of lecture per week. This course will ask to what extent human behavior in its various individual, group, social, and cultural dimensions can be understood using the relatively small number of basic principles provided by evolutionary biological considerations.

112. Special Topics in Biological Anthropology. (4) Course may be repeated for credit. Three hours of lecture per week and one or more hours of laboratory may be required based on topic. Prerequisites: Anthropology 1 recommended. Varying topics covering current discoveries, research, theories, fieldwork, etc., in the field of biological anthropology. Topics vary with instructor. (F,SP)

History of Anthropology

114. History of Anthropological Thought. (4) Three hours of lecture and one hour of discussion per week. Formerly 114A. This course will present a history of anthropological thought from the mid-19th century to the present, and will draw upon the major subdisciplines of anthropology. It will focus both upon the integration of the anthropological subdisciplines and upon the relationships between these and other disciplines outside anthropology. (F)

Medical Anthropology

115. Introduction to Medical Anthropology. (4) Three hours of lecture and one hour of discussion per week. Cultural, psychological, and biological aspects of the definitions, causes, symptoms, and treatment of illness. Comparative study of medical systems, practitioners, and patients. (F,SP)

119. Special Topics in Medical Anthropology. (4) Course may be repeated for credit. Three hours of lecture per week. Prerequisites: Upper division status and consent of instructor. Special topics in cultural, biomedical, and applied approaches to medical anthropology. (F,SP)

Archaeology

121. Historical Archaeology. Archaeology of the pe- riod, from the first European settlement in America, Australasia, South Africa, etc. The following series of 121, Historical Archaeology sequence courses may be taken in any order.

121A. American Material Culture. (4) Three hours of lecture per week. Prerequisites: 2 or consent of instructor. Formerly 121. Prerequisites in material culture as it reflects behavioral and psychological aspects of American culture since the 17th century. Topics include architecture, domestic artifacts, mortuary art, foodways, and trash disposal. Euro-American, African American, and Native-American examples are considered.

121AC. American Material Culture. (4) Students will receive no credit for 121AC after taking 121A. Three hours of lecture per week. Prerequisites: 2 or consent of instructor. Patterns as it reflects behavioral and psychological aspects of American culture since the 17th century. Topics include architecture, domestic artifacts, mortuary art, foodways, and trash disposal. This course satisfies the American Cultures requirement. (F,SP)

121B. Theoretical Approaches in American Historical Archaeology. (4) Three hours of lecture per week. Prerequisites: 2 or consent of instructor. This course will provide a background in the theoretical and methodological development of American historical archaeology, with particular emphasis on the ways in which archaeologists have approached the integration of archaeology and documentary and ethnographic and ethno-historic data. Emphasis on continuing theoretical development in the discipline. Politics of historical archaeology, and ways in which historical archaeologists and other public historians make the past relevant to the present.

121C. Historical Artifact Identification and Analysis. (4) Two hours of lecture and three hours of laboratory per week. Prerequisites: 121A or 121B recommended and consent of instructor. Learn to work with historical artifacts from the stage of discovery through the stages of analysis and interpretation. The focus is on the analysis of materials (i.e., ceramic, glass, metal, bone, shell artifacts) recovered from historic sites. Skills acquired
122. Archaeology of the Americas. Three hours of lecture per week. Prerequisites: 2. A course that examines the native societies of the Americas in the past, as known from a variety of sources used by archaeologists, including study of material culture, documents, and archaeological research, and the use of ethnographic accounts. (F,SP)

122A. Archaeology of North America. (4) Prerequisites: 2. Formerly 127. Prehistory of North American Indians; prehistoric culture areas; relations with historic Indians. (F,SP)

122B. Culture Contact in North America. (4) Three hours of lecture per week. This course examines the implications of early encounters between Native Americans and Europeans, including how indigenous peoples responded to European contact and colonialism, and how the outcomes of these encounters influenced cultural developments in postcolonial contexts. The study employs a holistic approach that integrates evidence from archaeology, ethnography, ethnohistory, linguistics, biological anthropology, and native oral traditions. Case studies from the Caribbean, Florida, Louisiana, Virginia, Alaska, Hawaii, and California will be included. (F,SP)

122C. Archaeology of Central America. (4) A survey of what archaeologists tell us about the pre-Columbian cultures of Central America: the Olmec, Maya, Aztec, and their neighbors. (F,SP)

122D. World of Ancient Maya. (4) A survey of the history of development of Maya society and culture in Central American prior to European contact in the 16th century AD. (F,SP)

122E. Andean Archaeology: People of the Andes. (4) Prerequisites: 2. A group of courses focusing on the pre-Columbian cultures of South America. (F,SP)

122F. California Archaeology. (4) Prehistory of California Indians; selected archaeological sites and current issues in interpretations. (F,SP)

122G. Archaeology of the American Southwest. (4) This course will outline the development of native cultures of the Southwest from Paleo-Indian times (ca. 11,500 BC) through early European contact (ca. AD 1600). Topics to be covered include the greater environment, early foraging culture, the development of agriculture and village life, the emergence and decline of regional alliances, abandonment, and reorganization, and changes in social organization, external relations and trade. The course is designed as an advanced upper division seminar for students majoring in anthropology with an emphasis in archaeology. Can be taken as a distance learning course with another university. (F,SP)

122H. World of the American Southwest. Three hours of lecture per week. Prerequisites: 2. A variety of courses that consider the peoples and past cultures of the Old World and archaeological traditions, and other relevant fields. No specific sequence to courses; students may take any or all of the following in any sequence. (F,SP)

123. Old World Cultures. Three hours of lecture per week. Prerequisites: 2. A variety of courses that consider the peoples and past cultures and societies of the Old World and archaeological traditions, and other relevant fields. No specific sequence to courses; students may take any or all of the following in any sequence. (F,SP)

123A. Stone Age Archaeology. (4) Prerequisites: 2. Overview of stone age cultures and development. Selected topics or geographic areas of paleolithic research. (F,SP)

123C. Archaeology of Europe. (4) Prerequisites: 2. Formerly 127. Selected topics and research problems in the archaeology of the Pleistocene and /or post-Pleistocene of Europe. (F,SP)

123D. Archaeology of East Asia. (4) Prerequisites: 2 recommended. Prehistoric and protohistoric archaeology in China, Japan, and Korea. (F,SP)

124. Pacific Cultures. Three hours of lecture per week. Prerequisites: 2. A variety of courses that consider the peoples and past cultures of the Pacific. This course will outline the development of native cultures in the Pacific, through the study of archaeology, ethnography, ethnohistory and other relevant fields. No specific sequence to courses; students may take any or all of the following in any sequence. (F,SP)

124A. Archaeology of the South Pacific. (4) Selected topics and research problems in the archaeology of the southern Pacific. (F,SP)

124AC. Hawaiian Ethnohistory. (4) Three hours of lecture per week. Prerequisites: 3 or equivalent or consent of instructor. Developmental foundations of the 20th-century multicultural society of Hawaii, during the period 1778-1900, explored through an explicitly anthropological perspective. The following ethnic groups are emphasized: Native Hawaiians, British-American whites, Chinese, and Japanese. This course satisfies the American Cultures requirement. (F,SP)

125. Asian Archaeology. Three hours of lecture per week. Courses focus on past Asian peoples, culture, and societies through the study of archaeology, ethnography, and other relevant fields. These courses meet the area requirement and may be taken in any sequence. (F,SP)

125A. Archaeology of East Asia. (4) Students will receive no credit for 125A after taking 123D Fall 2002 or 2003. Prerequisites: 2 or consent of instructor. Prehistoric and protohistoric archaeology in China, Japan, and Korea. (F,SP)

125B. Archaeology and Japanese Identities. (4) Course explores stereotypes and images of traditional Japanese culture and people through archaeological analysis. Particular emphasis is placed on changing lifeways of past residents of the Japanese islands, including commoners, samurai and nobles. Consideration will be given to the implications of these archaeological studies for our understanding of Japanese identities. (F,SP)

127. Bioarchaeology. Two hours of lecture and four hours of laboratory per week. Prerequisites: 2, 4, 5B, 10, 18. A variety of courses related to bioarchaeology. (F,SP)

127A. Introduction to Skeletal Biology and Bioarchaeology. (4) Students will receive no credit for 127A after taking either C103 or Integrative Biology C142. An introduction to skeletal analysis. Prerequisites: 2 recommended. Special topics in archaeology which meet the area requirement for the anthropology major. (F,SP)

127M. Special Topics in Archaeology/Area. (4) Course may be repeated for credit. Three hours of lecture per week. Prerequisites: 2 recommended. Special topics in archaeology which meet the area requirement for the anthropology major. (F,SP)

128. Special Topics in Archaeology. (4) Course may be repeated for credit. Three hours of lecture per week. Prerequisites: 2. Current topics in method and theory of archaeological research, varying with instructor. (F,SP)

128A. Special Topics in Archaeology/Area. (4) Course may be repeated for credit. Three hours of lecture per week. Prerequisites: 2 recommended. Special topics in archaeology which meet the method requirement for the anthropology major. (F,SP)

129. Topical Areas in Archaeology. Three hours of lecture per week. Prerequisites: 2. (2 or 3 for 129A.) These courses explore contemporary topics in archaeology with an emphasis on cultural areas. Courses may be taken in any sequence. (F,SP)

129A. Prehistoric Art. (4) Prerequisites: 2. Three hours of lecture and four hours of fieldwork per week. Prerequisites: 2 or consent of instructor. Guidance in the preparation of excavated materials for publication, including sampling and analysis strategy, drawing, photography, and write-up. (F,SP)

130. History and Theory of Archaeology. (4) Three hours of lecture per week. Prerequisites: 2 recommended. Formerly 136. A critical review of the historical background and philosophical premises of past and present anthropological theory with respect to its concepts of time and change. (F,SP)

C131. Geoarchaeological Science. (4) Three hours of lecture and three hours of laboratory per week. Prerequisites: 2 or Earth and Planetary Science 50, or consent of instructor. Formerly 131. This survey and laboratory course will cover a broad range of current scientific techniques used in the analysis of geoarchaeological materials. The course includes field and laboratory studies in analytical chemistry, geology, petrology/petrography and a survey of dating materials in archaeology, the historical development of geoarchaeological science and other aspects of archaeological science applied to geoa rchaeological materials. Also listed as Earth and Planetary Science C131. (SP) Shackley.

132. Analysis of Archaeological Materials. Three hours of lecture and three hours of laboratory per week. Prerequisites: 2 or consent of instructor. Principles of analysis of inorganic archaeological materials, including, but not limited to stone, ceramics, and metals. Laboratory instruction. These courses meet the method requirement for the major and may be taken in any sequence. (F,SP)

132A. Analysis of Archaeological Ceramics. (4) Discussion of and laboratory instruction in methods of analysis of ceramics used by archaeologists to establish a time scale, to document interconnections between different areas, sites, or groups of people, to suggest what activities were carried out at particular sites, and to understand the organization of ceramic production itself. (F,SP)

134. Analysis of the Archaeological Record. (4) Three hours of lecture and two hours of laboratory per week. Prerequisites: 2 or consent of instructor. (F,SP)

134A. Field Course in Archaeological Methods. (6) Course may be repeated for credit. One hour of lecture and eight hours of fieldwork per week. Forty hours of fieldwork for four weeks. Prerequisites: 2 or consent of instructor. Formerly 133 and N133. Practical experience in the field study of archaeological sites and materials. Coverage may include reconnaissance, mapping, recording, and excavation. (F,SP)

134B. Archaeological Laboratory Practicum. (1-4) One hour of lecture and two to eleven hours of laboratory
An opportunity to work
Focus on the use of digital media to
The course explores major developments
Theories of social structure,
A
Comparative study of the
Cultural Heritage. (4) One hour of lecture and four
136E. Digital Documentation and Representation of
duction timetables. (F,SP)
chaeological physical or natural sciences, or archae-
mal analysis. May be taken concurrently
other laboratory courses or as the logical follow-
field project. Projects will vary by course. (F,SP)
135. Paleothnobotany: Archaeological Methods
and Theories (4) Three hour lecture and
136F. Digital Archaeology from Field to Classroom. (4)
Students will receive no credit for 136F after taking
134B. This is a course that builds on the fieldwork con-
ucted by the participants in the Summer Sessions field school and is designed for students who participated in the field school work as post-excavation leads in small groups to guide new students through the pro-
cessing of the multimedia record and other digitized ar-
chaeological data.
136H. Archaeology After-School Program. (Course
may be repeated for credit. Prerequisites: 2 or consent of instructor. Formerly 128M. An opportunity to work with sixth-graders in exploring the worlds of archae-
ology, history, and computer-based technologies.

Social and Cultural Anthropology
138A. History and Theory of Ethnographic Film. (4)
Three hours of lecture and one hour of discussion per week.
Prerequisites: 3 or 114. This course will trace the
development of ethnographic film from its beginnings at the
turn of the century to the present. In addition to
looking at seminal works in the field, more recent and
innovative productions will be viewed and analyzed.
Topics of interest include the role of visual media in
providing a cultural critique of the human condi-
tion and the relationship to seeing and believing. Require-
ments include film critiques, a film proposal, and a final
exam.
138B. Field Production of Ethnographic Film. (5)
Three hours of lecture and three hours of laboratory per
week. Prerequisites: 138A (no exceptions). This course is devoted to training students in methods of
ethnographic field production. Based on the
previous course work in 138A, students will work toward the production of an ethnographic video from
elected project proposals. In addition to weekly dis-
cussions of student projects, guest consultants and
lecturers will lend their expertise on aspects of pro-
duction as well as editing. (F,SP)
139. Controlling Processes. (4) Three hours of lecture
and one hour of discussion per week. Prerequisites:
Those with at least one social science course will
be more familiar with the subject matter. This course will discuss various aspects related to power
and control and examine indirect mechanisms and pro-
cesses by which direct control becomes hidden,
voluntary, and unconscious in industrialized societies.
Readings will cover language, law, politics, religion,
medicine, sex, and gender. (SP)
141. Comparative Society. (4) Three hours of lecture
and one hour of discussion per week. Prerequisites: 3
or consent of instructor. Theories of social structure,
functional interrelationships of social institutions. Pr-
jects are required. (F,SP)
142. Kinship and Family. (4) Three hours of lecture per
week. Prerequisites: 3. Comparative study of the
family and kinship systems in non-state and state so-
cieties. (F,SP)
144. Social and Cultural Change. (4) Three hours of
lecture per week. Prerequisites: 3 or consent of in-
structor. Western theories of evolutionary and revo-
utionary change will be compared to the historical
experience of the United States and study of the
material and cultural analysis of change in other socie-
ties past and present. This course will examine
these models by reading about the particular and mult-
ifarious experiences of social change in different places, and the ways in which
clonizations and reconstructions of
some societies are of interest. A
A course that is mainly interested in the
societies and cultures generated by
the colonial en-
counter, agrarian transition, industrialization, immigration, and the impact of modern capital
in non-Western
societies. (F,SP)
145. Urban Anthropology. (4) Three hours of lecture per
week. Prerequisites: 3 or consent of instruc-
tor. This course explores major developments
within feminist theory in the 20th century within an
international context, with special attention to issues of
class, culture, race, ethnicity, and sexuality. (F,SP)
C147B. Sexuality, Culture, and Colonialism. (4)
Three hours of lecture per week. Prerequisites: 3 or

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cultural impact of tourism on host cultures and communities.

152. Art and Culture. (4) Three hours of lecture per week. Graphic and plastic arts and their relations to culture in non-literate societies; illustrative material from the Heard Museum of Anthropology.

156B. Culture and Power. (4) Three hours of lecture per week. The course examines how representations are situated within fields of power and, in turn, how political considerations are translated into cultural forms. Topics include: philosophy and history of social science, power/knowledge, the social, difference and power, social science and ethics. (F,SP)

157. Anthropology of Law. (4) Three hours of lecture per week. Prerequisites: 3 or consent of instructor. Comparative survey of the ethnography of law; methods and of data relevant to the comparative analysis of the forms and functions of law. (F)

158. Religion and Anthropology. (4) Three hours of lecture per week. Prerequisites: 3 or consent of instructor. A consideration of the interplay between religious beliefs and institutions and other aspects of culture. (F,SP)

160. Forms of Folklore. (4) Three hours of lecture per week. Prerequisites: Upper division standing. A world-wide survey of the major and minor forms of folklore with special emphasis upon proverbs, riddles, superstitions, games, songs, and narratives. (F,SP)

160AC. Forms of Folklore. (4) Three hours of lecture per week. Prerequisites: Upper division standing. A world-wide survey of the major and minor forms of folklore with special emphasis upon proverbs, riddles, superstitions, games, songs, and narratives. This course satisfies the American Cultures requirement. (F,SP)

161. Narrative Folklore. (4) Three hours of lecture per week. Prerequisites: Upper division standing. The study of folktales, myths, legends, and other forms of verbal art; methods and theories of folklore. (F,SP)

162. Topics in Folklore. (4) Course may be repeated for credit. Three hours of lecture per week. Prerequisites: 3 or consent of instructor. Special topics in folklore or ethno-musico-logy. (F,SP)

162AC. Topics in Folklore. (4) Course may be repeated for credit. Three hours of lecture per week. Prerequisites: Upper division standing. This course satisfies the American Cultures requirement. (F,SP)

163AC. American Folklore. (4) Three hours of lecture per week. The course will cover both the materials and scholarship on American folklore. Generally speaking, the course will treat Native American folklore first, then European, Mexican, and Asian American folklore (including American immigrant traditions), and finally African American folklore. There will be a midterm, a final exam, and a library research paper of at least 7-10 pages. This course satisfies the American Cultures requirement.

166. Language, Culture, and Society. (4) Three hours of lecture per week. Prerequisites: 3 or consent of instructor. Prerequisite: Upper division standing. The course examines the complex relationships between language, culture, and society. The materials in the course draw on the fields of linguistic anthropology, linguistics, sociolinguistics, philosophy of language, sociolinguistics, and literary criticism to explore theories about how language is shaped by, and in turn shapes, our understandings about the world, social relations, identities, power, aesthetics, etc. (F,SP)

Methods

169. Ethnographic Research Methods. (5) Course may be repeated for credit. Three hours of lecture and one hour of discussion per week. Prerequisites: 3 and consent of instructor. The course deals with the problems, design, methods, and applications of ethnographic field research. There is no specific sequence to the courses; students may take any or all of the following courses in any sequence.

180. European Society. (4) Three hours of lecture per week. Prerequisites: 3 and 4. Course may be repeated for credit. Three hours of lecture per week. Prerequisites: Upper-division status; consent of instructor. Individual field experience sponsored by a faculty member; written reports required.

185A-H. Group Study. (1-4) Course may be repeated for credit. Enrollment is restricted; see the Introduction to Courses and Curricula section of this catalog. Must be taken on a passed/not passed basis. Prerequisites: Open only to honors students. Credit for upper division courses by small groups.

191. Undergraduate Seminar. (4) Course may be repeated for credit. Three hours of lecture per week. Prerequisites: 3 recommended. Special topics in cultural anthropology which meet the area requirement for the major. (F,SP)

192AC. Special Topics in American Cultures. (4) Course may be repeated for credit. Three hours of lecture per week. Prerequisites: Upper division standing. Emphasis on Iberian-Indian assimilation, African influences, development of folk-peasant societies, and the concept of national cultures. Discussion of contemporary issues relevant to one of the regions of the Americas. (F,SP)

197. Ethnography of the Maya. (4) Students will receive no credit for 179 after taking 188 or spring or fall 2001. Three hours of lecture per week. Prerequisites: 3 recommended. An introduction to the anthropological study of Maya peoples in southern Mexico, Guatemala, and Belize. The course focuses on certain parts of the Maya region, emphasizing selected themes and problems. We will explore regional history through the development of Maya studies and the historical transformations of Maya societies. These themes will be traced through studies of the Classic Maya, the Spanish conquest and colonization, indigenous resistance and rebellion, and recent pan-Maya activism.

180. European Society. (4) Three hours of lecture per week. Representative groups in historical and modern perspective. Urban-rural relationships and the dynamics of change.

181. Themes in the Anthropology of the Middle East and Islam. (4) Three hours of lecture per week. Prerequisites: 3 and 4. Course may be repeated for credit. Emphasis on social and cultural aspects of the contemporary Near East, with special emphasis upon Arab populations. (F,SP)

188. Southeast Asia. (4) Three hours of lecture per week. Prerequisites: 3 or other social science introductory course. This course examines the political, economic, and cultural dynamism of the region. Topics include colonialism, patron-colonialism, gender relations, capitalism, and the postcolonial state. (F,SP)

189. Special Topics in Social/Cultural Anthropology. (4) Course may be repeated for credit. Three hours of lecture per week. Prerequisites: 3 or consent of instructor. Various topics covering different research theory, method; issues of social and cultural concern; culture change, conflict, and adaptation. May combine more than one subdiscipline of Anthropology. (F,SP)

189A. Special Topics in Anthropology/Area. (4) Course may be repeated for credit. Three hours of lecture per week. Prerequisites: 3 recommended. Special topics in cultural anthropology which meet the area requirement for the major. (F,SP)

189M. Special Topics in Cultural Anthropology/Method. (4) Course may be repeated for credit. Three hours of lecture per week. Prerequisites: 3 recommended. Special topics in cultural anthropology which meet the method requirement for the major. (F,SP)

Seminars and Independent Study

H195A-H/195B. Senior Honors. (4;4) Three hours of tutorial per week. Credit and grade to be awarded on completion of sequence. Prerequisites: Open only to honors students. Systematic readings in history and modern theory, collection and analysis of research material, preparation of an honors thesis. Group or individual tutorials. (F,SP)

196. Undergraduate Seminar. (4) Course may be repeated for credit. Two hours of seminar per week. Prerequisites: Consent of instructor. Seminar for the advanced study of the subject matter of a previously given upper division course, emphasizing reading and discussion.

197. Fieldwork. (1-12) Course may be repeated for credit. Enrollment is restricted; see the Introduction to Courses and Curricula section of this catalog. Must be taken on a passed/not passed basis. Prerequisites: Open only to honors students. Systematic readings in history and modern theory, collection and analysis of research material, preparation of an honors thesis. Group or individual tutorials. (F,SP)

198. Independent Study. (1-4) Course may be repeated for credit. Enrollment is restricted; see the Introduction to Courses and Curricula section of this catalog. Must be taken on a passed/not passed basis. Prerequisites: 60 units; good academic standing. Undergraduate research by small groups.

199. Supervised Independent Study. (1-4) Course may be repeated for credit. Enrollment is restricted; see the Introduction to Courses and Curricula section of this catalog. Must be taken on a passed/not passed basis.
basis. Prerequisites: Consent of instructor. Supervised independent study and research.

Graduate Courses

Physical Anthropology

C200. Human Evolution. (4) Course may be repeated for credit. Two hours of seminar per week. Prerequisites: Consent of instructor. Topic to vary each semester. Also listed as Integrative Biology C265.

Medical Anthropology

215B. Advanced Medical Anthropology. (4) Course may be repeated for credit. Three hours of seminar per week. Prerequisites: Consent of instructor. Anthropological theory, data, and methodology in relation to the health sciences, Lectures, readings, and supervised field research. May be taken in association with Medical Anthropology at UCSF.

219. Topics in Medical Anthropology. (4) Course may be repeated for credit. Two hours of seminar per week. Prerequisites: Consent of instructor. Comparative study of mental illness and socially generated disease: psychiatric treatment, practitioners, and institutions.

Archaeology

220. Western North America. (4) Course may be repeated for credit. Two hours of seminar per week. Prerequisites: Consent of instructor.

221. Pre-Columbian Central America. (4) Course may be repeated for credit. Two hours of seminar per week. Prerequisites: Consent of instructor.

222. Archaeology of South America. (4) Course may be repeated for credit. Two hours of seminar per week. Prerequisites: Consent of instructor.

223. African Prehistory. (4) Course may be repeated for credit. Three hours of seminar per week. Prerequisites: Consent of instructor.

226. Archaeology of the Pacific. (4) Course may be repeated for credit. Two hours of seminar per week. Subject matter will vary; current issues and debates in the archaeology of the Pacific, e.g., trade, exchange, colonization, maritime adaptations, etc.

227. Historical Archaeology Research. (4) Course may be repeated for credit. Two hours of seminar per week. Prerequisites: Graduate standing with some background in archaeology, or undergraduates who have taken 2, or consent of instructor. Historical archaeology seminar. Subject matter will vary from year to year.

228. Method. (4) Course may be repeated for credit. Two hours of seminar per week. Prerequisites: Consent of instructor. Various topics and issues in the methods of archaeological analysis and interpretation, style, ceramics, architectural analysis, lithic analysis, archaeozoology, etc.

229A-229B. Archaeological Research Strategies. (4,4) Three hours of seminar per week. Prerequisites: Consent of instructor. Required for all first and second year graduate students in archaeology. Three hours of seminar discussion of major issues in the history and theory of archaeological research and practice (229A), and of the research strategies and design for various kinds of archaeological problems (229B). To be offered alternate semesters.

229C. Writing the Field in Archaeology. (4) Two hours of seminar per week. This seminar is intended to guide students in the definition of a field within archaeology, from initial conceptualization to writing of a field statement, dissertation chapter, or review article. (F,SP)

230. Special Topics in Archaeology. (4) Course may be repeated for credit. Two hours of seminar per week. Prerequisites: Consent of instructor.

Social and Cultural Anthropology

240A-240B. Fundamentals of Anthropological Theory. (5,5) Four to six hours of seminar per week. Prerequisites: Enrollment is strictly limited to and required of all anthropology and medical anthropology graduate students who have not been advanced to candidacy. Anthropological theory and practice—following the rest of the world—have been undergoing important restructuring in the past decade. The course is organized to reflect this fact. We will begin by looking at recent debates about the nature and purpose of anthropology. This will be followed by starting position reading a series of classic ethnographies in new ways as well as examining some dimensions of the current research agenda in cultural anthropology.

250. Seminars in Social and Cultural Anthropology. Course may be repeated for credit. Two to three hours of seminar per week.

250A. Psychological Anthropology. (4)
250B. Gender Anthropology. (4)
250C. Globalization. (4)
250D. Violence and Resistance. (4)
250E. Anthropology of Politics. (4)
250F. Religion. (4)
250G. Anthropology of Ethics. (4)
250H. Art and Culture. (4)
250I. Anthropology of Law. (4)
250J. Ethnographic Field Methods. (4)
250K. Colonialism and Postcolonialism. (4)
250L. Urban Anthropology. (4)
250M. Ecological Anthropology. (4)
250N. Classic Ethnography. (4)
250O. Practice Theory. (4)
250P. Development. (4)
250Q. Voices of the Subject. (4)
250R. Dissertation Writing. (4)
250S. Material Culture. (4)
250T. Indigenous Peoples. (4)
250U. Race, Ethnicity, and Identity. (4)
250V. Tourism. (4)
250W. Process of Social Control. (4)
250X. Special Topics. (4)

Folklore

260. Problems in Folklore. (4) Course may be repeated for credit. Two hours of seminar per week. Prerequisites: Consent of instructor.

C261. Theories of Narrative. (4) Three hours of seminar per week. This course examines a broad range of theories that elucidate the formal, structural, and contextual properties of narratives in relation to gestures, the body, and emotion; imagination and fantasy; memory and the senses; space and time. It focuses on narratives at work, on the move, in action as they emerge from the matrix of the everyday preeminently, storytelling in conversation—as key to folk lore—the epic, the myth. Also listed as Folklore C261. (F,SP) Staff

Linguistics

270B. Fundamentals of Language in Context. (4) Three hours of seminar per week. Intensive introduction to the study of language as a cultural system and speech as socially embedded communicative practice. This is the core course for students wishing to take further coursework in linguistic anthropology.

Area Studies

280. Seminars in Area Studies. Course may be repeated for credit. Two hours of seminar per week. Prerequisites: Consent of instructor. Four to six hours of seminar per week. Prerequisite: Enrollment is strictly limited to and required of all anthropology and medical anthropology graduate students who have not been advanced to candidacy. Anthropological theory and practice—following the rest of the world—have been undergoing important restructuring in the past decade. The course is organized to reflect this fact. We will begin by looking at recent debates about the nature and purpose of anthropolo-gy. This will be followed by starting position reading a series of classic ethnographies in new ways as well as examining some dimensions of the current research agenda in cultural anthropology.

280B. Africa. (4)

280C. South Asia. (4)
280D. China. (4)
280E. Japan. (4)

290. Survey of Anthropological Research. (1) Course may be repeated for credit. Two hours of lecture every other week. Must be taken on a satisfactory/unsatisfactory basis. Required each term of all registered graduate students prior to their advancement to Ph.D. candidacy.

Independent Study

296A. Supervised Research. (2-12) Course may be repeated for credit. Variable units for field research per week. Prerequisites: Consent of instructor. Practice in original field research under staff supervision. One unit of credit for every four hours of work in the field.

296B. Supervised Research. (4) Course may be repeated for credit. Two hours of consultation per week. Prerequisites: Consent of instructor. Individual conferences intended to provide directed reading in subject matter not covered by available seminar offerings.

299. Directed Reading. (1-8) Course may be repeated for credit. One to eight hours of conference per week. Prerequisites: Consent of instructor. Individual conferences to provide supervision in the preparation of an original research paper or dissertation.

602. Individual Study for Doctoral Students. (1-12) Course may be repeated for credit. One to eight hours of consultation per week. Must be taken on a satisfactory/unsatisfactory basis. In preparation for Ph.D. examinations. Individual study in consultation with advisor. Intended to provide an opportunity for qualified students to prepare themselves for the various examinations required of candidates for the Ph.D. May not be used for unit or residence requirements for the degree.

Professional Courses

300. Graduate Pedagogy Seminar. (2) Two hours of seminar per week. Must be taken on a satisfactory/unsatisfactory basis. Training in both the logistics and the pedagogical issues of undergraduate teaching. (F,SP)

301. Professional Training: Teaching. (1-6) Course may be repeated for a maximum of 12 units. Two hours of seminar and eight hours of lecture per week. Must be taken on a satisfactory/unsatisfactory basis. Group consultation with instructor. Supervised training with instructor on teaching undergraduates.

Applied Science and Technology

(Office of the Graduate Dean)

Chair: Nathan Cheung, Ph.D.
Office: 230 Bechtel Engineering Center #1708, (510) 642-8790
www.berkeley.edu/ast

Executive Committee

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Constance Chang-Hasnain, Ph.D. (Electrical Engineering and Computer Sciences)
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Philip S. Marcus, Ph.D. (Mechanical Engineering)
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Yuri Suzuki, Ph.D. (Materials Science and Engineering)
Jinjiao Wu, Ph.D. (Materials Science and Engineering)
Xiang Zhang, Ph.D. (Mechanical Engineering)

Program Overview

This graduate group is administered by the College of Engineering’s Interdisciplinary Studies Center. The program has three major areas of emphasis:

*Professor of the Graduate School
†Recipient of Distinguished Teaching Award
applied physics, engineering science, and mathematical sciences. Faculty associated with the program are drawn from several departments within the College of Environmental Design as well as from the Departments of Physics, Chemistry, Chemical Engineering, and Mathematics. Topics of interest include the novel properties and applications of nanostructures, thin film science, micro and nanoscale mechanical systems (MEMS), short wavelength coherent radiation, X-ray micro-imaging for the life and physical sciences, plasma physics and plasma-assisted materials processing, laser-induced chemical reactions, processing of complex material systems, ultrafast phenomena, particle accelerators, nonlinear dynamics, chaotic systems, numerical methods, and topics in computational fluid mechanics and chemical reactions. This program awards the Doctor of Philosophy degree.

In addition, students who have been admitted to the program may also apply for the newly created designated emphasis in nanoscale science and engineering (DE NSE), and the newly-created emphasis (DE) in Energy, Science, and Technology (DE EST). Students usually apply for these DE during their first or second year of study. For further information about the DE NSE, see nano.berekeley.edu/ and for information about the DE EST, see www.mse.berkeley.edu/dese.html.

Graduate research in the AS&T Program benefits from state-of-the-art experimental facilities at the Berkeley campus and the Lawrence Berkeley National Laboratory. These facilities include the National Center for Electron Microscopy, with the world’s highest resolution high-voltage microscope; a microfabrication lab for student work involving lithography, MEMS im-plantation, and thin-film deposition; an integrated sensors laboratory; femtosecond laser laboratories; optical, electrical, and magnetic resonance spectroscopies; short wavelength laser laboratories that explore the unparalleled variety of material, chemical, and surface science analytic equipment; and a soft X-ray synchrotron dedicated to materials, chemical, and biological research using high-brightness and partially coherent X-rays. The interdisciplinary, collaborative nature of the AS&T Program provides ample opportunity to develop new research directions by making the best use possible of these facilities and of the other research instrumentation available to AS&T faculty.

Graduate Courses. Students in the AS&T Program take courses from regular departments with the concurrence of faculty advisers. In addition, AS&T specific courses: C201 Lecture 219G, C215 Lecture 216, Soft X-Rays and EUV Radiation (3 units); AST 239/EE 239, Partially Ionized Plasmas (3 units); AST 225/MASS 225, Thin-Film Science and Technology (3 units); AST 295R/ChemE 295R, Applied Spectroscopy (3 units); Engineering 298A. Introduction to Electron Beam Lithography and Nanofabrication Technology (3 units); Engineering 298B, Research Topics in Internal Combustion Engines.

Admission. The complete application, including transcripts, GRE scores, three letters of reference, and a statement of academic and professional goals, is due the first Tuesday in January for the following fall semester. To obtain application forms, students should contact the Applied Science and Technology Graduate Group, 230 Bechtel Engineering Center #1708, University of California, Berkeley, Berkeley, CA 94720-7308. Telephone: (510) 642-8790; e-mail: ast.program@coe.berkeley.edu

Graduate Courses.
C210. Soft X-rays and Extreme Ultraviolet Radiation. (3) Three hours of lecture per week. This course will explore modern developments in the physics and applications of soft-x-rays. It begins with a review of electromagnetic radiation at short wavelengths including dipole radiation, scattering and refractive index, using a semi-classical atomic model. Subject matter will include the generation of x-rays with laboratory tubes, synchrotron radiation, laser-plasma sources, x-ray lasers, and black body radiation. Concepts of spatial and temporal coherence will be discussed. Also listed as Electrical Engineering C213. (SP) Atwood
C225. Thin-Film Science and Technology. (3) Three hours of lecture per week. Prerequisites: Graduate standing in engineering, physics, chemistry, or chemical engineering, and knowledge of growth, microstructure evolution and reactions. Comparison of thin-film deposition techniques. Characterization techniques. Processing of thin films by ion implantation and rapid annealing. Processing-microstructure-property-performance relationships in the context of applications in information storage, ICs, micro-electromechanical systems and optoelectronics. Also listed as Materials Science and Engineering C225. (SP) Dubon, Staff
C239. Partially Ionized Plasmas. (3) Three hours of lecture per week. Prerequisites: Upper division course in electromagnetics or fluid dynamics. Introduction to partially ionized, chemically reactive plasmas, including collisional processes, diffusion, sources, sheaths, boundaries, and diagnostics. DC, RF, and microwave discharges. Applications to plasma-assisted materials processing and to plasma wall interactions. Also listed as Electrical Engineering C239. Offered alternate years. (SP) Lieberman
C295R. Applied Spectroscopy. (3) Three hours of lecture per week. Prerequisites: Upper division course in engineering, physics, chemistry, or chemical engineering; courses: quantum mechanics, linear vector space theory. After a brief review of quantum mechanics and semi-classical theories for the interaction of radiation with matter, this course will survey the various spectroscopies associated with the electromagnetic spectrum, from gamma rays to radio waves. Special emphasis is placed on application to research problems in applied and engineering sciences. Graduate researchers interested in systematic in situ process characterization, analysis, or discovery are best served by this course. Also listed as Chemical Engineering C295R.

298A. Group Studies, Lectures, or Seminars. (1-6) One to six hours of group study/lecture/seminar per week. Prerequisites: Consent of instructor. Advanced group studies, lectures, or seminars in subjects which are interdisciplinary in the various fields of engineering or other sciences associated with engineering problems. Topics which form the basis of seminars will be announced at the beginning of each semester. May be cross-listed with other engineering group studies, lectures, or seminars. (F,SP)

299. Individual Study or Research. (1-12) Course may be repeated for credit. Must be taken on a satisfactory/unsatisfactory basis. Prerequisites: Consent of instructor; graduate standing. Investigations of advanced problems in applied science and technology. Sponsored by Engineering Interdisciplinary Studies Center. (F,SP) Staff

Mary C. Comerio, M.Arch., M.S.W. Washington University. Seismic design, post-disaster reconstruction policy and planning
Galén Cranz, Ph.D. University of Chicago. Social factors in design, specialization of taste, body-conscious design, sustainable parks
*Tam Davis, M.E.D. Yale University. F.A.I.A. Architectural design
Anthony Dubovsky, M.A. University of California, Berkeley. Architecture design
Richard Fernau, M.Arch. University of California, Berkeley. Architecture design
Harrison S. Fraker Jr., M.F.A. Princeton University. F.A.I.A. Architectural design, specialization, passive solar, daylighting and energy conservation
Paul Groth, Ph.D. University of California, Berkeley. History of urban form and urbanism, passive solar, daylighting and energy conservation
*Yehuda Kalay, Ph.D. Carnegie-Mellon. F.A.I.A. Congruency, design theory, architectural design
*Raymond Lifchez, M.S., M.A., M.C.P. Columbia University. University of California, Berkeley. Architectural design, special populations
*Dority Lyndon (The Eva L.) Professor Emeritus of Architecture and Urban Design (M.F.A.) Princeton University. F.A.I.A. Architectural design, design of urban spaces
W. Mike Martin, Ph.D. University of California, Berkeley. Architecture design and study of practice methods and theories
*Schatz-Fleischer, E. P./U. 120/230 de Lausanne, Switzerland. Design theories and methods
Stanley Saltzstein, M.Arch. University of California, Berkeley. Architectural design
*Stephen O. Tobinr, Ph.D. Harvard University. Architectural history
*Marc Treib, M.Arch. University of California, Berkeley. Architectural design, architecture of Japan and Scandinavia, landscape architecture and the arts
Christopher Alexander, Ethos/Professional Harvard University. Architectural design, pattern language
Richard Bender (Emeritus), M.Arch. Harvard University. Architecture and Urban Design (Emeritus). Architectural design
Charles C. Benton, M.Arch. Massachusetts Institute of Technology. Architectural design, architectural history
Sara S. Ishikawa (Emerita), M.Arch. Princeton University. Architectural design
Christopher D. Y. Lieberman (Emeritus), M.Arch. University of California, Berkeley. Architectural design
Stanley Saltzstein, M.Arch. University of California, Berkeley. Architectural design
Lars G. Larup (Emeritus), M.Arch. Harvard University. Architectural design, architectural history
Clare Cooper Marcus (Emerita), M.A., M.C.P. University of Nebraska; University of California, Berkeley. Social factors, geography
Richard L. Meier (Emeritus), Ph.D. University of California at Los Angeles. Social factors in design
Norma E. Evenson (Emerita), Ph.D. California Institute of Technology. Architectural design
Sam Y. Hassid (Emeritus), Ph.D. Harvard University, F.A.I.A. Architectural design
Sanford Hinshin (Emeritus), B.Arch., Columbia University. F.A.I.A. Architectural design
Harry L. Magazin (Emeritus), M.Arch. University of California, Berkeley. Architectural design
Donald E. Olsen (Emeritus), M.Arch. Harvard University, F.A.I.A. Architectural design, architectural design process
Richard K. Peterson, Ph.D. California Institute of Technology. Architectural design, architectural lighting design
Herwin Schafer (Emeritus), Ph.D. Harvard University. Architectural design
Daniel Solomon (Emeritus), M.Arch. University of California, Berkeley. Architectural design
Claude StöPieter (Emeritus), M.Arch. Harvard University, F.A.I.A. Architectural design
Dell Upton (Emeritus), Ph.D. Brown University. Architectural history
Sim H. Van der Pyn (Emeritus), B.Arch. University of Michigan. Architectural design, appropriate technology
*Associate Professors
Gary L. Black, M.Arch., M.S. University of California, Berkeley. Structure
Dana Buntrick, M.Arch. University of Michigan. Japanese architecture and production, teamwork and multiple expertise, sustainable design, recent technologies
Ravenel Chokosombatchai, M.A., M.L.A. Harvard University. Architectural design
René Choe (The Eva L.) Professor Emeritus of Design Ethics) M.Arch. Massachusetts Institute of Technology. Architectural design
Carla C. Cristy, Ph.D. State University of New York, Binghamton. Architectural theory and criticism
Ron Davids, M.A. Royal College of Art, London. Architectural design
Ellen M. Glotzer, M.A. University of Pennsylvania. Architectural design
M. Susan U Beebe (Emeritus), M.Arch. University of Oregon. Architectural design, energy, comfort, daylighting
Gary A. Brown (Emeritus) M.Arch. Harvard University. Architectural design
Gara P. Chikawa (Emeritus), B.Arch. University of California, Berkeley. Architectural design
Kenneth H. Simmons (Emeritus), B.Arch. University of California, Berkeley. Architectural design
**Assistant Professors
Mark Anderson, M.Arch. Harvard University. Design, theory, critique, professional practice
Nicholas de Monchaux, M.Arch. University of California, Berkeley. Design, urban theory, digital representation
Lisa French-Hicks, M.A. University of California, Berkeley. Architectural design, architectural fabrication, edge city landscape
Andrew Shanks, Ph.D. Princess Margaret Hospital, University of American architecture and urbanism, impact of World War II on design professions and American culture

Architecture
(Conference of Environmental Design)
Department Office: 232 Wurster Hall #1800, (510) 642-4942 arch.ced.berkeley.edu
Chair: Mary C. Comerio, M.Arch., M.S.W.
Professors
Nasser Al-Nakeeb, Ph.D. University of California, Berkeley. Architecture and urban design, urban history, urban development in the Third World
Edward A. Atlee, Ph.D. University of Edinburgh. Building technology, energy
Charles C. Bentley, M.Arch. Massachusetts Institute of Technology. Building technology
Peter Bossomann, M.Arch. University of California at Los Angeles. Architecture and urban science
Jean-Paul Bourdier, D.P.L.G., M.Arch. École des Beaux Arts, Versailles; University of Illinois. African architecture
Gail S. Brager, Ph.D. University of California, Berkeley. Building technology, comfort, energy

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Architecture (Conference of Environmental Design)
Department Overview

The Department of Architecture at UC Berkeley has a strong tradition of fostering independent design thinking and research. Our award-winning faculty are engaged in diverse undergraduate and graduate educational programs and carry out leading research in constructed and virtual environments, architectural technologies, and architectural humanities. The multidisciplinary interests of our faculty and graduate students form the basis of exciting new research collaborations with a variety of other disciplines, including anthropology, international studies, engineering, new media, and urban studies.

Architecture is more than design. To create livable environments means balancing complex social, political, economic, and technical requirements with human needs. Students take courses in environmental history, behavioral sciences, resource management, and design theory, as well as in the technical, aesthetic, and cultural components of design. The department prides itself on educating not only good architects, but also environmentally knowledgeable citizens.

Undergraduate Program

Undergraduates enroll in a four-year program leading to the Bachelor of Arts degree with a major in architecture.

The undergraduate program in architecture combines required courses in environmental design and architecture with opportunities for highly varied and individual programs planned by the student with the assistance or guidance of an adviser. Through its core courses the program offers a broad introduction to architecture, and students can specialize in community design, applied building sciences, design methods, history and theory, or the social basis of design. In addition to offering a sound general education, undergraduate studies can provide preprofessional competency for entry-level employment in architecture, for graduate work in architecture, or for further studies in a related environmental design field.

Accreditation. In the United States, most state regulatory agencies require a degree from an accredited professional degree program as a prerequisite for licensure. The National Architectural Accrediting Board (NAAB), which is the sole agency authorized to accredit U.S. professional degree programs in architecture, and students can specialize in community design, applied building sciences, design methods, history and theory, or the social basis of design. In addition to offering a sound general education, undergraduate studies can provide preprofessional competency for entry-level employment in architecture, for graduate work in architecture, or for further studies in a related environmental design field.

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Master of Architecture, the professional degree, Master of Architecture, will be awarded to students who successfully complete a program of studies of three years in length beginning upon the completion of one year of previous education and experience. The department makes no restriction to the field of undergraduate preparation. However, the length of time required for the completion of the required semester course units, and the specific list of required courses may vary depending upon undergraduate major, professional and other work experience, and previous graduate study, if any.

Additional prerequisites for admission to the professional master's degree programs are college-level or equivalent mathematical training through analytical geometry and beginning calculus and beginning physics through mechanics.

The basic course leading to the M. Arch. degree takes three academic years and requires the completion of at least 72 units during that period of residence. Persons who hold a B.A. or B.S. degree with a major in architecture may receive up to one year of advanced standing. The Master of Architecture Committee of the department will determine the specific amount of advanced standing individually for the student at the time she or he first registers for graduate study in the department. Special one-year M.Arch. programs are available to persons holding the five-year, professional undergraduate degree, Bachelor of Architecture, from an accredited school, or comparable five-year degree from foreign universities and technical institutes.

Doctor of Philosophy Degree in Architecture.

The doctorate of philosophy in architecture program is open to exceptionally qualified persons who present outstanding academic records along with clear evidence of independent ability and achievement in architectural research and scholarship. Graduate Division requirements with respect to admission, the language requirement, candidacy, and the dissertation under Plan I (thesis) or Plan II (doctoral) must be satisfied by the student who wishes to be considered for the Concurrent Program in Architecture and Landscape Architecture when completing the UC Berkeley Graduate Application. Acceptance into the concurrent degree program is limited to outstanding applicants. More information may be obtained from the Graduate Office in 202 Wurster Hall or from the Department of Landscape Architecture and Environmental Planning web site.

Concurrent Degree Program with the Department of Civil and Environmental Engineering, Division of Structural Engineering, Mechanics, and Materials. The two departments offer a joint program with a concurrent degree for exceptionally qualified students. Students must fulfill the course requirements for both departments but are allowed a reduction in elective units that will achieve a savings in the time enrolled, varying from one semester to one year, depending on undergraduate preparation. Some courses are prerequisite to entering the program or may be taken during the first year of enrollment without credit toward the minimum course requirements. Students who wish to be considered for the Concurrent Program in Architecture and Civil and Environmental Engineering when completing the UC Berkeley Graduate Application.

Concurrent M.A. in International and Area Studies. The concurrent M.A. program in International and Area Studies (IAS) is designed to complement the graduate degree programs in architecture. It is intended to produce graduate students who combine advanced professional training with a detailed knowledge of contemporary international issues or particular world areas or countries. The content of each M.A. program will be shaped in consultation with the departmental IAS adviser to address the specific needs and interests of the individual student.

In addition to satisfying all Graduate Division and departmental requirements for the Master of Architecture, M.S., or Ph.D. degrees, students in this concurrent program must complete a minimum of 120 semester units, of which the special area agreed upon with the IAS adviser.

For additional information on these degree programs, please consult the Announcement of the College of Environmental Design or the Graduate Office.
Architectural Design

Lower Division Courses

24. Freshman Seminars. (1) Course may be repeated for credit as topic varies. One hour of seminar per week.

200A-100B. Fundamentals of Architectural Design. (5,5) Three hours of lecture and five hours of studio per week. Prerequisites: ED 11A-11B. Must be taken in sequence. Introductions in the design of buildings. Problems emphasize the major social, technological, and environmental determinants.

100A focuses on the design process, social factors and site planning.

100B stresses structures, materials, and energy consideration. Studio work is supplemented by lectures, discussions, readings and field trips.

101. Case Studies in Architecture. (5) Course may be repeated for credit as topic varies. Three hours of lecture and five hours of studio per week. Prerequisites: 100A-100B. Problems in design of buildings of intermediated and developed cultures. Each section deals with a selected topic, such as housing, site planning, institutional buildings, community development, and interiors. Studio work is supplemented by lectures, discussions, readings and field trips.

109. Seminar in Architectural Design. Course may be repeated for credit as topic varies. Prerequisites: Consent of instructor. Selected topics in the theories and concept of architectural design. For current selection offerings, see departmental announcement.

109X. Special Topics: Architectural Design. (1-4) (F,SP)

Graduate Courses

200A-200B. Fundamentals of Architectural Design. (7,7) Sixty hours of lecture/seminar and 120 hours of studio per semester. 200A must be taken on a satisfactory/unsatisfactory basis. 200B must be taken for a letter grade. Studio work is supplemented by lectures, discussions, readings and field trips.

201. Case Studies in Architectural Design. (5) Course may be repeated for credit. Three hours of lecture and five hours of studio per week. Prerequisites: 200A-200B or 200A-200B. Each section deals with a specific problem such as housing, high-rise design, interiors, community development. Studio work is supplemented by lectures, discussions, readings, and field trips.

202. Final Project Studio. Students may take 202A or 202B but not both; course must be taken in last semester of the Master of Architecture degree program. Prerequisites: Three semesters of 201 and 209D. This is the final project studio. Projects in 202 are presented in the form of a design thesis or a research thesis.

202A, Final Project Studio: Studio Thesis Option. (5) Course sections are organized by specific topics such as housing, urban design, energy issues. Independent projects may be pursued within the topic.

202B, Final Project Studio: Independent Thesis Option. (5) Zero hours of lecture and zero hours of studio per week. Course may be taken for credit or non-credit. Students seeking permission to enroll in this section must petition the chair of graduate advisors before the end of fall semester.

209. Seminar: Architectural Design. Course may be repeated for credit as topic varies. One to four hours of lecture per week. Prerequisites: Second- or third-year graduate standing. Topical approach, with major problem and current issues in architectural design. (F,SP) Staff

209A. Seminar in Architectural Theory. (1-4) (F,SP)

209C. Current Issues in Architecture. (1-4) (F,SP)

209D. Final Project Preparation Seminar: Thesis. (1-4) Prerequisites: Graduate standing. Formerly 209A. This is a fall seminar for students who plan to work on final projects (theses and professional reports) during the spring. The seminar, including lectures by the instructor, is meant to train students in pre-thesis or professional project research and to help them in selecting their thesis or professional report topic. The course includes weekly exercises ranging from writing articles documenting, illustrating, and criticizing buildings to producing a thesis or professional report prospectus.

209X. Special Topics: Architectural Design. (1-4) (F,SP)

Architectural Humanities

Social and Cultural Processes in Architecture and Urbanism

Upper Division Courses

110AC. Social and Cultural Factors in Design. (4) Forty hours of lecture and 20 hours discussion per semester. The course is a survey of how political, cultural, social, and economic factors influence architectural design. The focus for studying these broad topics will be housing of all types and special needs facilities. The weekly-two-hour sessions will be a combination of student debates on a topic presented by the instructor, lectures, panels of guest speakers, and student presentations. The one and one-half hour course will focus on projects and field work. This course satisfies the American Cultures requirement.

111. Housing: An International Survey. (3) Three hours of lecture per week. Introduction to international housing from the Architectural and City Planning perspective. Housing issues (social, cultural, and policy) ranging from micro-scale (house) to macro-scale (city) presented with a comparison of housing situations in developed and developing countries. (SP) Staff

118AC. Housing American Cultures. (3) Three hours of lecture/discussion/student presentation/exercise per week. Residential communities that endure have a capacity to house multiple and evolving patterns of living. What aspects of residential settings support or inhibit cultural variations and change? The course has three parts: a history of residential design from the perspective of professional practice and cultural practices; a comparative analysis of everyday patterns of inhabitation; and the design of environments that accommodate a range of cultural readings. Students are asked to draw plans, write, and conduct field surveys. This course satisfies the American Cultures requirement. (SP) Chow

C119. Office of the Future. (3) Three hours of lecture per week. Prerequisites: Upper division standing. Conventional office design will undoubtedly change, primarily in response to concerns about productivity and health. How can research, especially psychological research, help improve the design of offices? What should traditional offices look like 50-100 years from now? How will they be used? These are questions the course will try to answer. Also listed as Undergrad Interdisciplinary Studies C137.

Graduate Courses

211. Theory and Methods in the Social and Cultural Basis of Design. (4) Course may be repeated for credit as topic varies. Three hours of lecture per week plus field/trip/exam advising. Prerequisites: 110 or consent of instructor. Explores a variety of theories which explain and document the relationship between humans and the environment they build; outlines the research methods appropriate to each theory. (SP) Crazn

212. Body-Conscious Design: Shoes, Chairs, Rooms, and Beyond. (3) Three hours of seminar per week. This seminar prepares students to evaluate and design environments from the point of view of how they interact with the human body. Tools and clothing modify that interaction. Semi-fixed features of the near environment, especially furniture, may have greater impact on physical well being and social-psychological comfort than fixed features like walls, openings, and volume. Designers can help redefine and legitimize new attitudes toward supporting the human body by, for example, designing for a wide range of postural alternatives and possibly designing new kinds of furniture. At the urban design scale, the senses of proprioception and kinesthetics can be used to shape architecture and landscape architecture. This course covers these topics with special emphasis on chair design and evaluation. The public health implications of a new attitude toward posture and back support are explored. The course heightens students’ consciousness of their own and others’ physical perceptions through weekly experiential exercises. Students produce three design exercises: shoe, chair, and a room interior. (SP) Crazn

219. Seminar on Social and Cultural Bases in Design. Course may be repeated for credit as topic varies. Formerly 211 and 219A through 219G. Selected topics such as social policy and building form, environments for special populations, for birth and death, social and housing form, personal and societal values in design, participatory design, and urban parks. For current seminar offerings see departmental announcement.

219A. Design and Housing in the Developing World. (3)

219B. Social Aspects of Housing Design. (1-4)

219X. Special Topics: Social and Cultural Bases of Design. (1-4) Fifteen hours lecture/seminar per unit per semester. Prerequisites: 210 or consent of instructor.

History of Architecture and Urbanism

Upper Division Courses

170A-170B. An Historical Survey of Architecture and Urbanism. (4,4) Forty-five hours of lecture and 15 hours of seminar/discussion per semester. Prerequisites: 170A-170B and consent of instructor. This course is the first part of this sequence studies the ancient and medieval periods; the second part studies the period since 1400; the aim is to look at architecture and urbanism in their social and historical context. (F,SP) Staff

173A. Modern Architecture. (3) Forty-five hours of lecture per semester. Prerequisites: 170A-170B and consent of instructor.

174C. San Francisco Architecture. (3) Forty-five hours of lecture/seminar per semester. Prerequisites: 170A-170B and consent of instructor.

175B. Islamic Architecture. (3) Course may be repeated for credit. Forty-eight hours of lecture per semester. Prerequisites: 170A-170B and consent of instructor.

179. Prosemaker in the History of Architecture. (1-4) Course may be repeated for credit. Fifteen hours of lecture/seminar per unit per semester. Prerequisites: 170A-170B and consent of instructor. Special topics in Architectural History. For current section offerings, see departmental announcement. (F,SP) Staff

Graduate Courses

217. Methods of Historical Research and Criticism in Architecture. (4) Sixty hours of lecture/seminar per semester. Prerequisites: Doctoral candidate or consent of instructor. (SP)

279. Seminar in the History of Architecture. Course may be repeated for credit as topic varies. Prerequisites: 179 or consent of instructor.

279C. Modern Architecture. (1-4)

279D. History of Housing. (1-4)
279X. Special Topics: Architectural History. (1-4)

281. Methods of Inquiry in Architectural Research. (4) Four hours of lecture/discussion per week. Prerequisites: M.S. or Ph.D. standing or consent of instructor. This is the introductory course in methods of inquiry in architecture research to be required of all entering Ph.D. students in all areas of the program. The purpose is to train students in predissertation and prethesis research strategies, expose them to variety of inquiry methods including the value of scholarly research, the nature of evidence, critical reading as content analysis and writing, presenting and illustrating scholarship in the various disciplines of architecture. (F)

Architectural Methods and Practices

Professional Practices

Upper Division Courses

120. Introduction to the Practice of Architecture. (3) Two or three hours lecture and one hour of discussion per week. Architect, owner, developer, and contractor relations; contract documents; and the ethics of the profession. (F, SP) Davis

128. Architectural Internship. (5) Twenty-four hours of lecture/seminar and 160 hours of internship per semester. Prerequisites: 120 and consent of instructor. An intensive and structured exposure to the professional practice of architecture using the resources of practicing architects’ offices as the “laboratory.” (F, SP) Comerio

129X. Special Topics in the Practice of Design. (1-4) Fifteen hours lecture/seminar per unit per semester. (F, SP) Graduate Courses

229. Seminar on the Practice of Design. Course may be repeated for credit as topic varies. Prerequisites: Designated section of 129. Selected topics such as issues of project development and professional practice, construction law, materials and specifications, construction management, marketing and management, professional writing, issues in community development and public policy. For current section offerings see departmental announcement. Staff

229A. Introduction to Construction Law. (1-4) (F, SP) Graduate Courses

229X. Special Topics in the Practice of Design. (1-4) (F, SP)

Theories and Methods

Upper Division Courses

130. Introduction to Design Theories and Methods. (3) Forty-five hours of lecture and 20 hours of discussion per semester. Formerly 130A. Comparison and discussion of the theories of environmental design, and development and testing of various methods, tools, and techniques available for environmental designers. Particular emphasis lies on the difficulties of environmental design and related fields. (SP) Staff

132. Introduction to Computer-Aided Design in Architecture. (4) Three hours of lecture and three hours of laboratory per week. Prerequisites: IDS 110 or equivalent or consent of instructor. This course introduces students to the principles of CAD, the theories and methods on which it is founded, and its principal applications in practice (generating, evaluating, modeling, drafting, and rendering design solutions). (SP) Kalay

138. Advanced Computer-Aided Rendering and Animation. (1-4) Course may be repeated for credit. This is a computer class which will enable students to carry out self-determined architectural or other projects in consultation with the professor and the GSI. There will be discussions, demonstrations, viewing of historical and current animations, idea sessions, field trips, guest reviewers and lectures. Idea development beyond the original project will result from the interaction of the idea with the computer input and class discussions. Results may be either 2D or 3D, still or animated. Groups of two or more students may work on a project. The class will be conducted in the Silicon Graphics Industry. Reviews will take place around the workstation. Staff

139X. Special Topics: Design Theories and Methods. (1-4) Course may be repeated for credit as topic varies. Fifteen hours lecture/seminar per unit per semester. Prerequisites: 130. (F, SP) Graduate Courses

230. Advanced Design Theories and Methods. (3) Forty-five hours of lecture/seminar per semester. Prerequisites: 130A or consent of instructor. Design and planning methods, their theoretical foundations and practical applications.

231. Research Methods for Design. (2) Thirty hours of lecture/seminar per semester. Methods of scientific research and the use of research in design. Required for doctoral students in the area of Design Theories and Methods. (SP)

235. Seminar in Design Theories and Methods for Doctoral Students. (1) Course may be repeated for credit. Thirty hours of seminar/discussions per semester. Must be taken on a satisfactory/unsatisfactory basis. Required for doctoral students in this study area. Staff

239. Seminar in Design Theories and Methods. Course may be repeated for credit as topic varies. Prerequisites: 130A or consent of instructor. (SP)

239A. Design and Computers. (1-4) Kalay

239C. Representation of Design Knowledge. (3) Formerly 239H. This course explores the essence and the nature of architectural design knowledge: What are its major characteristics? What are the relationships between them? How can they be represented? It does so in light of the new developments in AI, CAD, and in design methods research. The course also explores the potential of employing new tools and methods that may help define and represent design knowledge. Kalay

239X. Special Topics: Design Theories and Methods. (1-4) (F, SP)

Architectural Sciences

Building Sciences

Upper Division Courses

140. Introduction to Energy and Environmental Management. (4) Fifty hours of lecture and 30 hours of discussion per semester. Prerequisites: Physics or equivalent, or consent of instructor. Study of the thermal and lighting environments in buildings, with emphasis on quantitative design techniques. (SP) Benton, Brager

149. Seminar on the Physical Environment in Buildings. Course may be repeated for credit as topic varies. Prerequisites: 140. Special topics such as climatic design, heating, ventilating, air-conditioning systems, lighting and acoustics. For current section offerings see departmental announcement. (F, SP)

149A. Acoustics. (1-4) Graduate Courses

240. Advanced Study of Energy and Environmental Issues in Design. (3) Forty-five hours of lecture/seminar per semester. Prerequisites: 140 or consent of instructor. Formerly 240A. This course covers thermal and solar design.

241. Seminar on the Practice of Design. Course may be repeated for credit. Three hours of seminar per week. Required for doctoral students in the area of environmental physics. (SP) Brager

243. Natural Cooling and Ventilation. (3) Forty-five hours lecture/seminar per semester. Prerequisites: 140, 242 or consent of instructor. Course focuses on and student stands and ventilation, radiation, evaporation and earth-contact cooling and their treatment in architectural design. (SP)

245. Daylighting Analysis Using Physical Models. (3) Three hours of seminar per week. Prerequisites: 140 or consent of instructor. Seminar models as a vehicle for the investigation of daylight in architectural space including issues of photometric measurement, qualitative assessment, temporal variability, and presentation technique. (SP)

249X. Special Topics in the Physical Environment in Buildings. (1-4) Course may be repeated for credit as topic varies. Fifteen hours lecture/seminar per unit per semester. Prerequisites: 140.

249X. Special Topics in the Physical Environment in Buildings. (1-4) Course may be repeated for credit as topic varies. Fifteen hours lecture/seminar per unit per semester. Prerequisites: 140.

150. Introduction to Structures. (4) Forty-five hours of lecture and thirty hours of discussion per semester. Prerequisites: Physics 8A. Study of forces, materials, and structural significance in the design of buildings. Emphasis on understanding the structural behavior of real building systems. (F) Black

154. Design and Computer Analysis of Structure. (3) Thirty hours of lecture and 45 hours of laboratory per semester. Prerequisites: 150. Design and analysis of whole structural building systems with the aid of finite element analytical methods. Advanced structural concepts explored in a laboratory environment. Black

159. Seminar in Building Structures. Course may be repeated for credit as topic varies. Fifteen hours of lecture/seminar per unit per semester. Prerequisites: Consent of instructor. For current section offerings see departmental announcement. Staff

159X. Special Topics: Building Structures. (1-4) Selected topics such as experimental structures and architectural preservation.

Graduate Courses

253. Seismic Design and Construction. (3) Forty-five hours of lecture/seminar per semester. Prerequisites: 150. Seismic design and construction techniques for existing buildings and new construction. Topics will include: 1) Basic principles of seismic design and building performance, 2) retrofit of existing buildings and evaluation of structural and functional obsolescence, and 3) design and planning for class recovery and rebuilding. The course will use the campus construction as a laboratory for evaluating structural design and construction techniques. A research paper and seminar participation are the basis for grading. (F) Covenio

259. Special Topics: Building Structures. (1-4) Course may be repeated for credit as topic varies. Fifteen hours of lecture per unit per semester. Prerequisites: Consent of instructor. For current section offerings see departmental announcement. (F, SP)

259X. Special Topics: Building Structures. (1-4) Special topics such as experimental structures and architectural preservation. (F, SP)

Construction and Materials

Upper Division Courses

160. Introduction to Construction. (4) Three hours of lecture and three hours of laboratory per week. This
introduction to the materials and processes of construction takes architecture from design to realization. The course will cover four material groups commonly used in buildings: wood, concrete, steel, and glass. You will understand choices available and how materials are conventionally used. By observing construction, you’ll see how our decisions affect the size of materials, connections, and where they are assembled. Architects must understand not only conventions, but also the potential in materials, so we will also study unusual and new developments. (SP) Buntrock

169. Seminar in Building Process. (1-4) Course may be repeated for credit as topic varies. Fifteen hours of lecture/seminar per unit per semester. Special topics in construction and materials. (F,SP) Staff

169X. Special Topics: Construction and Materials. (1-4) Course may be repeated for credit as topic varies. Fifteen hours of lecture/seminar per unit per semester. Selected topics such as construction management, implementation and geological hazards to construction. For current section offerings see department announcement. (F,SP)

Graduate Courses

264. Off-site Fabrication. (3) Two hours of lecture and one hour of discussion per week. Prerequisites: 160 or consent of instructor. This seminar looks at the implications of off-site construction: sustainable, protected environments; worker efficiency and safety; trades are easy to coordinate; cheaper, semi-skilled labor can be used; construction periods can be shortened; permits may be more predictable. Off-site fabrication can allow for increased refinement and trial assemblies. However, it may also create monotonous sameness when the processes and results are not considered with care. (F)

265. Japanese Craft and Construction. (3) Two hours of lecture and one hour of discussion per week. Prerequisites: 150, 160, or consent of instructor. The course addresses the role craft and construction play in Japanese architecture and applies these lessons to the evaluation of an exemplary recent building having unusual technical features. Buildings are expressions of theoretical and technical intent and a response to cultural and economic forces; Japanese architecture is regarded as particularly innovative. In studying a system where there is an emphasis on collaboration, students also see the values of North American systems of architectural production. (F,SP) Buntrock

269. Seminar in Construction and Materials. Course may be repeated for credit as topic varies. Fifteen hours of lecture/seminar per unit per semester. Selected Topics in Construction and Materials. (F,SP) Staff

269X. Special topics: Construction and Materials. (1-4) One to four hours of seminar per week. Selected topics such as construction management implementation and geological hazards to construction. For current section offerings see department announcement.

Special Courses

Upper Division Courses

198. Special Group Study. (1-4) Course may be repeated for credit. Must be taken on a passed/not passed basis. Studies developed to meet needs. (SP)

199. Supervised Independent Study and Research. (1-4) Course may be repeated for credit. Must be taken on a passed/not passed basis. Individual study and research under the supervision of a faculty adviser and designed to reinstate the student’s background in areas related to the proposed degree. (F,SP)

281. Special Group Study. (1-4) May be repeated for credit up to unit limitation. Sections 1-3 to be graded on a satisfactory/unsatisfactory basis. Sections 4-10 to be graded on a letter grade basis. Special group studies on topics to be introduced by instructor or students. (F,SP)

299. Individual Study and Research for Master’s Students. (1-12) Course may be repeated for credit. Individual studies including research and individual research under the supervision of a faculty adviser and designed to reinforce the student’s background in areas related to the proposed degree. Must be taken on a satisfactory/unsatisfactory basis. (F,SP)

Professional Courses

300. Seminar in the Teaching of Architecture. (2) Four hours of seminar per week, including short lectures, meetings with the developer and owner of the land, studies and discussions of precedents, and reviews of student work with other members of the faculty and visitors. Must be taken on a satisfactory/unsatisfactory basis. The subject for the class is to design an urban neighborhood. Each student will be responsible for one city block of a 50-acre parcel of land in addition to a collectively developed city plan, and common design guidelines. We will standardize drawing scales, model materials, and techniques, and assemble individual designs into a comprehensive description of the neighborhood. The second part of the project will focus on detailed design at the scale of an individual unit of space for either living, working, or communal activities. (F) Staff

Visual Studies

Upper Division Courses

180A-180B. Introduction to Visual Studies: Word and Image. (4-4) Thirty hours lecture and 90 hours studio per semester. Prerequisites: Environmental Design 11A-11B or consent of instructor; A is prerequisite to B. Projects in graphic form, color, and word-image relationships. (F,SP)

181. Introduction to Photography. (4) Thirty hours lecture and 75 hours studio per semester. Learn the classic methods of photography using film, paper, and the darkroom. The course will cover 35mm camera operation, black and white film, and print processing along with essential aesthetic considerations. There will be hands-on demonstrations, laboratory sessions, slide shows, and in-class critiques, all designed to facilitate progress of assigned projects. There will be an introduction to digital technology. Historical and contemporary issues in photography will be discussed. Each student will finish class with a portfolio of photographs. (F,SP)

185X. Special Topics: Word and Image. Course may be repeated for credit as topic varies. Prerequisites: Environmental Design 11A-11B. Studio sections in areas such as calligraphy, the history of letter forms, and typography. For current offerings see the departmental announcement. (F,SP)

280. Advanced Visual Studies, (1-3) Course may be repeated for credit as topic varies. Fifteen hours of lecture/seminar per unit per semester. Prerequisites: 181,186. Advanced work in visual studies and photography. (F,SP)

298. Special Group Study. (1-5) No more than 5 units allowed each semester. Course may be repeated for credit. Special group studies on topics to be introduced by instructor or students. (F,SP)

299. Individual Study and Research for Master’s Students. (1-5) Course may be repeated for credit. One unit may be assigned for each semester of independent effort per week. Individual studies including reading and individual research under the supervision of a faculty adviser and designed to reinforce the student’s background in areas related to the proposed topic. (F,SP)

Art and History of Art

(Registrar’s Office)

Practice of Art

Department Office: 345 Kroeber Hall, (510) 642-2582 art.berkeley.edu
Chair: Prof. Loren Partridge, Ph.D.
Professors Emeriti: Elizabeth Graebe, M.F.A.
Katherine D. Sherwood, M.F.A.
Robert L. Hartman, M.A. (Emeritus)
Kari A. Kasten, M.A. (Emeritus)
James F. Mitchert, M.F.A. (Emeritus)
George J. Miyasaki, M.A. (Emeritus)
Mary L. Nealon, M.F.A. (Emerita)
David W. Simpson, M.F.A. (Emeritus)
Brian A. Wall (Emeritus)
Associate Professor
Jerrold C. Ballaine, M.F.A. (Emeritus)
Assistant Professors
Greg Wiener, M.A.
Anne Walsh, M.F.A.

Professor-in-Residence
Squeak Carnwath, M.F.A.
Department Overview

Four goals underlie the teaching in the Department of Art:

1. To advance the body of knowledge of human experience through aesthetic investigation.
2. To help students learn to think visually.
3. To help students understand the strategies that artists have devised to deal with aesthetic problems in both traditional and nontraditional methods of art making.
4. To help students develop a creative intelligence through practicing a visual arts discipline.

While the undergraduate major is made up largely of studio courses, it also requires at least three courses in art history. An art student should be familiar with ways in which visual ideas have been manifested and developed in the past and how specific notions have affected the perception that human beings have of themselves and their circumstances.

Work by students is featured in the exhibitions of the Worth Ryder Art Gallery, an adjunct educational facility that is open to the public.

Major Program

Prospective art majors should contact the Art Practice Department regarding their application to the major.

Transfer Students: If you are transferring to Berkeley with no previous college-level art courses, you are subject to the new art major. All new majors must complete Art 8 and 12, and two of the following: 13, 14, 16, and 23AC. You must also complete six upper division studio courses, and three specified courses in history of art (see below).

Lower Division: Art 8 and 12 (required of all Art majors), and two from the following: 13, 14, 16, and 23AC.

Upper Division: Art 117 or 118, and five additional upper division courses in practice of art.

History of Art: A minimum of three courses, one chosen from each of the following three course clusters:

A. Any one lower division History of Art class.
B. Twentieth-Century Art: HA 180 through HA 190 series.
C. One upper division art history course of the student’s choosing.

With the consent of the major advisor, a student may be given credit toward the major for up to two art-related courses taken outside the department, e.g., Set Design (Theater, Dance, and Performance Studies), Photography (College of Environmental Design), etc.

Honors Program in the Practice of Art. Students with an overall GPA of 3.5 or higher who are in their senior year may, with the permission of a regular faculty member, enroll in the honors program. This is an independent study course, taken for a minimum of one semester and a maximum of two semesters comprising a minimum of 4 units and a maximum of 8 units. A final grade is given at the completion of the program. Honors courses count toward the art major as they are taken for a letter grade.

Graduate Program

The Department of Art offers a two-year program of study leading to the M.F.A. degree in the practice of art.

The B.A. or B.F.A. in studio art or its equivalent is prerequisite to the M.F.A. degree.

For the M.F.A., students must complete a total of 64 units that include six graduate seminars, one 20th century art history course, one upper division division course and one graduate study abroad course. Students must also produce a comprehensive body of creative work to be exhibited in the final M.F.A. exhibition.

Further information about this program may be obtained from the Art Office, 345 Kroeber Hall.

Lower Division Courses

8. Introduction to Visual Thinking. (4) One hour of lecture and six hours of studio per week. Formerly 8A-8B. A first course in the language, processes, and meaning of visual art, highly organized around weekly lectures and studio problems that will introduce students to the nature of art making and visual thinking. (F.S.P) Staff

12. The Language of Drawing. (4) Three hours of lecture and six hours of studio per week. Prerequisites: 8. A study of drawing as a tool for articulating what the eyes, hand, and mind discover and investigate when coordinated. Some sessions will be devoted to drawing the human figure. Lectures and demonstrations introduce students to techniques and varied applications. (F.S.P) Staff

13. Language of Painting. (4) Three hours of lecture and six hours of studio per week. Prerequisites: 8. A concentrated investigation of what painting on a two-dimensional surface can elicit from what is both observable and imaginable. Lectures and demonstrations focus on issues that have concerned painters in the 20th century. Lectures and demonstrations introduce students to techniques and varied applications. (F.S.P) Staff

14. The Language of Sculpture. (4) Three hours of lecture and six hours of studio per week. Prerequisites: 8. A study of how interactions between physical form and the space it generates can serve as a metaphor. Field trips and illustrated talks will help familiarize you with the ideas sculptors have explored in the 20th century. Lectures and demonstrations introduce students to techniques and varied applications. (F.S.P) Staff

16. Introduction to Printmaking. (4) Six hours of lecture and three hours of studio per week. This course examines and explores various print disciplines. Students study and create traditional forms of fine art printmaking including woodcut, lithography, intaglio, and screenprinting as well as newer approaches which may include relief and intaglio etching. This course is a prerequisite for upper division print courses. Lectures and demonstrations introduce students to techniques and varied applications. (F.S.P) Staff

23AC. Foundations of American Cyber-Culture. (4) Six hours of lecture/studio per week. This new course will enable students to think critically about, and engage in practical experiments in, the complex interactions between new media and perceptions and performances of embodiment, agency, citizenship, collective action, individual identity, time and space. We will pay particular attention to the categories of personhood that make up the UC Berkeley American Cultures rubric (race and ethnicity), as well as to gender, nation, and culture, and the imagery and discourses that have shaped them. (F.S.P) Staff

24. The Language of Print. (4) Three units of studio per week. Prerequisites: At discretion of instructor. The subject matter will vary from semester to semester. Enrollment limited to 15 sophomores. Staff

298. Directed Group Study. (1-2) Course may be repeated for credit. Three hours of studio per week. Prerequisites: Open to freshmen and sophomores. This is a student-initiated course to be offered for academic credit. The subject matter will vary from semester to semester and will be taught by the student faculty under the supervision of a campus or departmental sponsor. Topics to be related to art practice. (F.S.P) Staff

Upper Division Courses

102. Approaches to Painting. (4) Course may be repeated for credit. Three hours of lecture and six hours of studio per week. Prerequisites: 8, 12, and 13 or equivalents. Inquiries into concepts of order, process, and content as related to human experience. While faculty contact with studio is highly individualized, the course involves group critiques and lectures as well as assigned field trips. Lectures and demonstrations introduce students to techniques and varied applications. (F.S.P) Staff

117. Drawing and Composition. (4) Course may be repeated for credit. Three hours of lecture and six hours of studio per week. Prerequisites: 8 and 12; and one from 13, 14, 16, 23 or equivalents. Advanced drawing and composition, color and black-and-white, primarily on paper. 117 or 118 is required of all art majors. Lectures and demonstrations introduce students to techniques and varied applications. (F.S.P) Staff

118. Figure Drawing. (4) Course may be repeated for credit. Three hours of lecture and six hours of studio per week. Prerequisites: 8, 12, and 13 or equivalents. Emphasis on the human figure seen in the context of pictorial space, dark and light and color. Various media. 118 or 117 is required of all art majors. Lectures and demonstrations introduce students to techniques and varied applications. (F.S.P) Staff

120. Approaches to Printmaking: Intaglio. (4) Course may be repeated for credit. Three hours of lecture and six hours of studio per week. Prerequisites: 8, 12, and 13 or equivalents. Students will discover what an artist can do with an etching press and a familiarity with such processes as etching, drypoint, aquatint, color, and monotype printing. The difference in the ways that these mediums enhance and condition what a print can say will be the focus of this course. Prerequisite for upper division print courses. Lectures and demonstrations introduce students to techniques and varied applications. (F.S.P) Staff

122. Approaches to Printmaking: Lithography. (4) Course may be repeated for credit. Three hours of lecture and six hours of studio per week. Prerequisites: 8, 12, 13, or equivalents. In the course of making lithographs, you will be encouraged to find an aesthetic direction of your own. Your instructor will help you develop skill in using both stone and metal plates. Lectures and demonstrations introduce students to techniques and varied applications. (F.S.P) Staff
124. Advanced Projects in Printmaking. (4) Course may be repeated for credit. Three hours of lecture and six hours of studio per week. Prerequisites: 8, 12, and 16, or equivalent. Projects are aimed at understanding and inventing ways in which time and change can become key elements in an artwork. Regular screenings of professional and student work are included. Other curricular projects and performances are included. Lectures and demonstrations introduce students to techniques and varied applications. (F,SP) Staff

130. Approaches to Sculpture: Concept and Construction. (4) Course may be repeated for credit. Three hours of lecture and six hours of studio per week. Prerequisites: 8, 12, and 14, or equivalents. More advanced instruction in metal and wood shop. Course is geared toward constructing objects, forms, and spatial structures to reveal concept. Further cultivation of ideas through illustrated talks of artists who have innovated the notion of sculpture. Architectural considerations, physical space of experienced. Lectures and demonstrations introduce techniques to students and varied applications. (F,SP) Staff

132. Approaches to Sculpture: Ceramics. (4) Course may be repeated for credit. Three hours of lecture and six hours of studio per week. Prerequisites: 8, 12, and 14, or equivalents. Students who have used to expand them. Lectures and demonstrations introduce techniques to students and varied applications. (F,SP) Staff

137. Advanced Projects in Ceramic Sculpture. (4) Course may be repeated for credit. Three hours of lecture and six hours of studio per week. Prerequisites: 8, 12, and 14, or equivalents. Students who have experienced in clay may enroll in this course to continue developing their ideas and their technical command of ceramic materials and processes. Lectures and demonstrations introduce students to techniques and varied applications. (F,SP) Staff

139. Approaches to Sculpture: Meaning in Material. (4) Course may be repeated for credit. Three hours of lecture and six hours of studio per week. Prerequisites: 8, 12, and 14, or equivalents. Further experience with three-dimensional forms. Open to the idea of using non-traditional art materials to build forms. Deeper exploration of the current state of art practice. Multiple applications are used to mediate ideas in space, including sculpture, installation, video, photography, and the computer. Lectures and demonstrations introduce students to techniques and varied applications. (F,SP) Staff

138. Approaches to Sculpture: Installations. (4) Course may be repeated for credit. Three hours of lecture and six hours of studio per week. Prerequisites: 8, 12, 14, and 16, or equivalent. Course will probe these tools for their use in creative expression. Investigations of small, team-based CGI creative production environments based on skills developed in Art 160 (Computer Animation I) and Film Studies C187. Completed projects will be presented at final PFA screening, and work will be available for student animation reels. UCB will provide duplication services for digital video production. Each week will include relevant readings, class discussions, guest speakers, demonstration of examples, and studio time for training and working on student assignments. (F,SP) Staff

171. Digital Video: The Architecture of Time. (4) Course may be repeated for credit. Three hours of lecture and six hours of studio per week. Prerequisites: 8, 12, and 23, or equivalents. This hands-on studio course is designed to present students with a foundation-level introduction to the skills, theories and concepts used in digital video production. Non-linear and non-destructive editing methods used in digital video are defining new “architectures of time” for cinematic creation and experience, and offer new and innovative possibilities for authoring new forms of the moving image. This course will expose students to a broad range of industry standards and provide a thorough historical and theoretical background. (F,SP) Sherwood

C174. Advanced Digital Video. (4) Nine hours of studio per week. Prerequisites: Film 100, 185 with a grade of A- or better and consent of instructor. This advanced digital video course is designed for students who have mastered basic skills and concepts involved in digital video production, and are interested in further investigating critical, theoretical, and creative research topics in digital video production. Each week will include relevant readings, class discussions, guest speakers, demonstration of examples, and studio time for training and working on student assignments. (F,SP) Staff

H195A-H195B. Special Study for Honors Candidates in the Practice of Art. (1-4) Course may be applied toward major requirements. Hours to be arranged. Prerequisites: Eligibility for admission to the Honors Program. Honors students are required to take three units of H195A. They may elect to take an additional three units (H195B) the following semester. (F,SP) Staff

198. Directed Group Study. (1-3) Course may be repeated for credit. Three hours of group study per unit per week. Must be taken on a pass/no pass basis. Prerequisites: Upper division standing. This is a student-centered course designed to explore a specific area of instruction. The subject matter will vary from semester to semester and will be taught by the student facilitator under the supervision of the faculty sponsor. Topics to be related to the art practice. (F,SP) Staff

199. Supervised Independent Study for Advanced Undergraduates. (1-4) Course may be repeated for credit. Does not satisfy major requirement for art. Hours to be arranged. Must be taken on a pass/no pass basis. (F,SP) Staff

218. Seminar: Theory and Criticism. (4) Course may be repeated for credit. Three hours of seminar per week. Prerequisites: Graduation or consent of instructor. Weekly meetings will provide a forum for the discussion of issues related to assigned readings in the fields of esthetics, theory and art criticism. Staff

290. Independent Study. (4) Course may be repeated for credit. Hours to be arranged. Prerequisites: Graduate standing and consent of instructor. Each week will include relevant readings, class discussions, guest speakers, demonstration of examples, and studio time for training and working on student assignments. (F,SP) Staff

294. Seminar for M.F.A. Students. (4) Course may be repeated for credit. Three hours of seminar per week. Prerequisites: Graduation or consent of instructor. This seminar will include relevant readings, class discussions, guest speakers, demonstration of examples, and studio time for training and working on student assignments. (F,SP) Staff

218. Seminar: Theory and Criticism. (4) Course may be repeated for credit. Three hours of seminar per week. Prerequisites: Graduation or consent of instructor. Weekly meetings will provide a forum for the discussion of issues related to assigned readings in the fields of esthetics, theory and art criticism. Staff

290. Independent Study. (4) Course may be repeated for credit. Hours to be arranged. Prerequisites: Graduate standing and consent of instructor. Each week will include relevant readings, class discussions, guest speakers, demonstration of examples, and studio time for training and working on student assignments. (F,SP) Staff

294. Seminar for M.F.A. Students. (4) Course may be repeated for credit. Three hours of seminar per week. Prerequisites: Graduation or consent of instructor. This seminar will include relevant readings, class discussions, guest speakers, demonstration of examples, and studio time for training and working on student assignments. (F,SP) Staff

Graduate Courses

218. Seminar: Theory and Criticism. (4) Course may be repeated for credit. Three hours of seminar per week. Prerequisites: Graduate standing and consent of instructor. Weekly meetings will provide a forum for the discussion of issues related to assigned readings in the fields of esthetics, theory and art criticism. Staff

290. Independent Study. (4) Course may be repeated for credit. Hours to be arranged. Prerequisites: Graduate standing and consent of instructor. Each week will include relevant readings, class discussions, guest speakers, demonstration of examples, and studio time for training and working on student assignments. (F,SP) Staff

294. Seminar for M.F.A. Students. (4) Course may be repeated for credit. Three hours of seminar per week. Prerequisites: Graduation or consent of instructor. This seminar will include relevant readings, class discussions, guest speakers, demonstration of examples, and studio time for training and working on student assignments. (F,SP) Staff

Graduate Courses
Double Majors: Two courses may overlap between separate degree programs.

Undergraduate Curriculum. The major in history of art consists of no fewer than 12 courses, and must include the following:
1. Any three lower division lecture courses in the history of art;
2. One lower or upper division course in the practice of art;
3. Five upper division lecture courses in five of six fields presently taught in the department: Ancient, Ancient, Medieval, Renaissance, Baroque, and Modern. One of these courses must be in Asian art unless the student has already taken a lower division course in this field;
4. Two additional upper division courses in the history of art, one of which must be a seminar;
5. One upper division course outside the department, related to the student's main focus of study. This course must be approved in advance by a departmental undergraduate major adviser.

All courses must be taken for a letter grade.

Honor Program. Students with at least a 3.5 grade-point average both overall and in all upper division courses taken to fulfill the requirements of the major are eligible for admission into the Honor Program. The requirements in the History of Art are required to complete satisfactorily, within their senior year, an honors thesis, consisting of at least two semesters of continuing academic work under faculty supervision (usually a seminar, directed research, or independent study course in the first semester plus, in the second semester, an H195 special study). Those who have completed the program will graduate with honors, high honors, or highest honors in the major depending upon their final GPAs in upper division courses taken to fulfill the major requirements. Applications, which require the signature of the project director or the undergraduate major adviser, are available in the History of Art office.

Minor Program
Required: Five upper division courses in at least three of the six fields presently taught in the department: Ancient, Ancient, Medieval, Renaissance, Baroque, and Modern. One course may be an upper division seminar; the rest must be lecture courses. All courses must be taken for letter grade. An overall GPA of 2.0 is required in all courses applied to the minor. A minimum of three courses must be taken at Berkeley. The minor is not open to practice of art majors.

Recommended: R18 and two other lower division history art survey courses (11, 30, 31, 34, 35, 40, 41, 51, 62) and one course in the practice of art, preferably drawing.

Graduate Study
The department offers a two-stage integrated master's and doctoral program in preparation for college teaching, writing, and specialized curatorial careers. Students are not admitted to work specifically for the M.A. degree; although it may be awarded to those working toward the Ph.D. after fulfillment of the requirements for Stage I of the M.A./Ph.D. program.

Preparation and Application for Admission
1. Undergraduate Training. Applicants must hold a Bachelor of Arts or its equivalent from an institution of acceptable standing. An undergraduate major in the history of art is not necessary. Students with high academic achievement in history, literature, practice of art, or similar humanistic disciplines are welcome. Those with little work in the history of art may have to complete some additional study to meet breadth requirements.
2. Post-M.A. Transfer Students. Students applying with an M.A. degree in history of art or a closely related field from another institution must submit their M.A. thesis or two substantial research papers with their application.
3. Statement of Purpose. Students should be as precise as possible in describing their intellectual background and interests in the history of art, their expectations for graduate study at Berkeley, and their academic and career goals.
4. Languages. Students are expected to be proficient in one or more of the appropriate foreign languages when they begin graduate study. The specific languages will vary according to the field of study (see Languages, below). Students are strongly urged to do everything possible to satisfy both language requirements before entering the program. We particularly recommend the summer before enrolling as a time to improve language proficiency.
5. Graduate Division Requirements. Applicants are encouraged to become familiar with Graduate Division regulations as described in the beginning sections of this catalog, specifically regarding GRE and TOEFL examinations, and minimum grade-point average.

Requirements for Completion of Stage I of the M.A./Ph.D. Program
1. Breadth. (a) Students of Western art: one upper division course or seminar in Asian art and in four of the following areas: Ancient; Medieval; Renaissance; Baroque; and Modern (1800 to present).
(b) Students of Asian art: one upper division course or seminar in one of the following areas: Ancient; Chinese (Japan, China, and India/Southeast Asia), and at least two upper division courses or seminars in one or two of the areas of Western art listed above in (a). The requirements may be satisfied by previous coursework at the undergraduate level.
2. Coursework. Ten courses selected to fulfill breadth requirements above (if necessary); at least five must be graduate-level art history courses, including three graduate seminars taught by department faculty. One course may be taken in connection with teaching (History of Art 300) and another to prepare the qualifying paper or MA thesis (History of Art 601). Additional courses may include upper division courses in other fields; the preprospective designed especially for first-year graduate students (History of Art 200); additional graduate seminars inside or outside the department; and individual study on selected topics (History of Art 299).
3. Languages. Two are required. (a) Students of Western art: German, and one other ancient or modern language as appropriate and determined by the graduate advisor. (b) Students of Asian art: One modern language (normally French or German), and one major Asian language (normally Chinese, Japanese, Sanskrit, or Hindi), or two Asian languages (one from the previous list and one determined in consultation with the graduate advisor). (c) Students of ancient art: German, Greek and Latin. (N.B. German and either Greek or Latin are required to complete stage I. The third language must be mastered by the completion of the Ph.D.)
4. Qualifying Paper or MA Thesis. The qualifying paper is a perfected version of a seminar paper, or a paper evolving out of independent research, normally no longer than 50 pages including footnotes and bibliography. It should demonstrate scholarly competence in the investigation of a limited problem. The qualifying paper is read and approved by three department faculty members. If the student does not receive a passing grade, the paper must be rewritten and re-submitted in accordance with Graduate Division regulations and be approved by a committee of three readers, two of whom will usually be mem-
5. Proceeding to Stage II. (a) Students enrolled in the M.A./Ph.D. program at Berkeley: The written proposal is submitted for discussion by the whole faculty as part of a general review of the student’s work so far. For this review the student submits a petition to the Graduate Division or graduate student affairs officer, and must be filed by the end of the third week of instruction in whichever semester is the degree expected. All degrees are awarded in December or May.

5. Proceeding to Stage II. (a) Students enrolled in the M.A./Ph.D. program at Berkeley: The written proposal is submitted for discussion by the whole faculty as part of a general review of the student’s work so far. For this review the student submits a petition to the Graduate Division or graduate student affairs officer, and must be filed by the end of the third week of instruction in whichever semester is the degree expected. All degrees are awarded in December or May.

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30. Art of India and Southeast Asia. (4) Three hours of lecture and one hour of discussion per week. This course surveys the arts of South and Southeast Asia from 2000 BC to the present, including painting, sculpture, and architecture. It treats prehistoric material (Indus Valley, Don Song), Buddhist sculpture, Hindu temples and their images, and miniature painting. Art will be considered in relation to its religious, political, and social contexts. The course will focus on major monuments, seen from multiple viewpoints, or upon processes that relate the art of this area to traditions of other parts of the world (or differentiate it from them). No previous background is presumed, and students will be introduced to basic art-historical methods of viewing and analysis.

34. Arts of China. (4) Three hours of lecture and one hour of discussion per week. An introduction to the arts of China, designed for newcomers to the history of art or to the study of Chinese culture. Lectures will survey six millennia of Chinese art thematically and chronologically, including the burial arts of the Neolithic period through the Tang dynasty (4th M.C.-10th C.E.). Buddhist and Daoist art, and architecture and calligraphy. Lectures, readings, and discussions will introduce students to various systems of Chinese thought, modes of visual analysis, and art historical method. (F,S,P) Berger

35. Art and Architecture in Japan. (4) Three hours of lecture and one hour of discussion per week. This course is an introduction to art and architecture in Japan. It is intended for newcomers to the history of art and culture, and for those with some knowledge of Japanese history and culture. Lectures will proceed chronologically, beginning with the archaeological objects and tumult of Neolithic Japan and ending with the popular graphic arts of the 17th and 19th centuries and modern transformations of art. (F,S,P) Stewart

40. Introduction to Greek and Roman Art. (4) Three hours of lecture and one hour of discussion per week. An introduction to the major works, themes, and agendas of Greek and Roman art and architecture. Participants will learn to acquire the perceptual and critical skills necessary for understanding these works; to analyze and interpret them; and to relate them to broader visual traditions, historical contexts, and social-cultural issues. Wherever possible, newly discovered works will be illustrated and discussed. (F,S,P) Levine

51. Introduction to Medieval Art. (4) Three hours of lecture and one hour of discussion per week. A selection from the vision of the visual arts from the fall of the Roman empire to the beginnings of Early Modern period. The emergence of new artistic media, subject matter, and strategies of making and viewing will be explored. The evolution of the ever-shifting historical circumstances of medieval Europe. Emphasis will be placed on the methods of interpreting the works, especially in relation to then-current social practices and cultural values. (F,S,P)

62. Introduction to Italian Renaissance Art. (4) Four hours of lecture and one hour of discussion per week. Using a few selected examples drawn from Florence, Rome, Milan, and Venice, this course will introduce most types of art and architecture produced in the Italian city squares of churches, palaces and libraries, and their painted and sculptural decoration. Special attention will be paid to various approaches used in interpreting works of art.

84. Sophomore Seminar. (1,2) Course may be repeated for credit as topic varies. One hour of seminar per week per unit for fifteen weeks. One and one half hours of seminar per week per unit for eight weeks. Three hours of seminar per week per unit for five weeks. Sections 1-2 to be graded on a passed/not passed basis. Prerequisites: Prior enrollment in a previous Sophomore Seminar. (F,S,P)

86. Directed Group Study for Freshmen and Sophomores. (1-4) Course may be repeated for credit. Three hours of work per week per unit. Must be taken on a passed/not passed basis. Prerequisites: Consent of instructor. Instruction for a small group of students on a topic initiated by those students. (F,S,P) Staff

100. Theories and Methods of Art History. (4) Three hours of lecture and one hour of discussion per week. How art has been studied in the past and how it is currently studied, its historiography and methodology. Consideration of the earliest writers (Pliny, Vasari) but also modern approaches, from traditional style analysis and connoisseurship to the foundations of modern art history (Panofsky, Riegl) to more recent approaches, e.g. psychoanalysis, feminism, social history, anthropology, semiotics, etc.

104. Gender and Representation. (4) Course may be repeated for credit as topic varies. Three hours of lecture and one hour of discussion per week. A consideration of historical and theoretical issues posed for visual media by attention to issues of gender. Previous coursework in art history recommended. Detailed descriptions of current and future offerings available in room 416 Doe Library.

108. Cities and the Arts. (4) Course may be repeated for credit as topic varies. Three hours of lecture and one hour of discussion per week. The study of various urban centers at particular times in relation to the art produced there. Emphasis may be placed on the rise of the city, the role of urban centers, the representation of places of power, learning or recreation, the construction of urbanity, the reaction to cities, etc. Detailed descriptions of current and future offerings available in room 416 Doe Library.

130A. The Art of Ancient Mesopotamia: 3500-1000 BCE. (4) Three hours of lecture and one hour of discussion per week. The art and architecture of early Mesopotamia will be explored in terms of the social, political, and cultural context of ancient Sumer, Babylon, and Assyria during the period of urbanization and early kingdoms. The course provides an integrated picture of the arts of Mesopotamia and neighboring regions from 3500-1000 BCE with an emphasis on the development of visual narrative, the rise of monumental sculpture, and the development of monumental architecture. Emphasis will be placed on the methods of interpreting the works, especially in relation to their social practices and cultural values. (F,S,P)

130B. The Art of Ancient Mesopotamia: 1000-3300 BCE. (4) Three hours of lecture and one hour of discussion per week. The art and architecture of later Mesopotamia will be explored in terms of the social, political, and cultural context of the great empires of Assyria, Babylon, and Persia. The course provides an integrated picture of the arts of Mesopotamia and neighboring regions from 1000-3300 BCE with an emphasis on the development of visual narrative, the use of art in the expression of authority and legitimacy, and the development of monumental architecture and sculpture. Emphasis will be placed on the methods of interpreting the works, especially in relation to their social practices and cultural values. (F,S,P)

131A. Early Chinese Painting. (4) Three hours of lecture and one hour of discussion per week. Chinese art history will be surveyed from the beginnings in the late Chou dynasty through the Sung dynasty. Emphasis will be placed on the relationship of art with its architectural context; genre painting and ukio-e; and literati painting (bunjin-ga). (S,P) Levine

131B. Later Chinese Painting. (4) Three hours of lecture and one hour of discussion per week. The art and architecture of the Chinese Buddhist temples, seventh to 13th centuries.

135A. Early Japanese Painting. (4) Three hours of lecture and one hour of discussion per week. The three main topics within a careful survey are Buddhist painting; narrative scroll; and painting in the Zen milieu.

135B. Later Japanese Painting. (4) Three hours of lecture and one hour of discussion per week. There are three main themes: decorative screenpainting (in its architectural context); genre painting and ukio-e; and literati painting (bunjin-ga). (S,P) Levine

136A. The Art of India: Indus Valley Through 550 A.D. (4) Three hours of lecture and one hour of discussion per week. A survey of Indian art from the Indus civilization through 550 A.D. This class will focus on Buddhist architecture and sculpture with emphasis on the development of (pictorial) narrative, the evolution of style and iconography and problems of dating.

136B. The Art of India: 500-1350 A.D. (4) Three hours of lecture and one hour of discussion per week. A survey of Indian sculpture and architecture in India from the sixth to 14th centuries. (F,S,P)

136C. The Art of India: 1350 A.D. to the Present. (4) Three hours of lecture and one hour of discussion per week. A selective survey of major developments in Muslim and Rajput painting from 1350 to the present.

137. The Art of Southeast Asia. (4) Three hours of lecture and one hour of discussion per week. The art of Cambodia, Vietnam, Thailand, Burma, and Indonesia focusing on the period from 400 to 1500 A.D. Sculpture and architecture will be considered as a balance of Indian and indigenous elements.

C120A. The Art of Ancient Mesopotamia: 3500-1000 BCE. (4) Three hours of lecture and one hour of discussion per week. The art and architecture of late Mesopotamia will be explored in terms of the social, political, and cultural context of ancient Sumer, Babylon, and Assyria during the period of urbanization and early kingdoms. The course provides an integrated picture of the arts of Mesopotamia and neighboring regions from 3500-1000 BCE with an emphasis on the development of visual narrative, the use of art in the expression of authority and legitimacy, and the development of monumental architecture and sculpture. Emphasis will be placed on the methods of interpreting the works, especially in relation to their social practices and cultural values. Also listed as Near Eastern Studies C121B. Open to nonmajors. Consent of instructor recommended. (F,S,P) Levine

C120B. The Art of Ancient Mesopotamia: 1000-3300 BCE. (4) Three hours of lecture and one hour of discussion per week. The art and architecture of later Mesopotamia will be explored in terms of the social, political, and cultural context of the great empires of Assyria, Babylon, and Persia. The course provides an integrated picture of the arts of Mesopotamia and neighboring regions from 1000-3300 BCE with an emphasis on the development of visual narrative, the use of art in the expression of authority and legitimacy, and the development of monumental architecture and sculpture. Emphasis will be placed on the methods of interpreting the works, especially in relation to their social practices and cultural values. Also listed as Near Eastern Studies C122B.
tention, wherever possible, will be paid to newly-discovered work.

141A. Archaic Greek Art and Architecture (750-480 B.C.). (4) The early development of the major genres of Greek art in the era of the emerging city-states.

141B. Classical Greek Art and Architecture (500-320 B.C.). (4) The maturity of the major genres of Greek art in Periclean Athens and the other leading centers.

141C. Hellenistic Art and Architecture (330-30 B.C.). (4) A survey of the major genres of Greek art in the Hellenic world from Italy to India.

145. Roman Art. (4) Four hours of lecture per week. The art of Rome and of the Roman Empire, from its sources in the Republican era to the Age of Constantine the Great.

151. Art in Late Antiquity. (4) Four hours of lecture per week. Imperial art from Gallienus through the collapse of the western empire. Christian art and identity from the beginning around 200 through the age of Justinian. Revivals in the seventh and eighth centuries. A look back from the court of Charlemagne and contemporary Constantinople.

150A. Gothic Art in Northern Europe: 1150-1270. (4) Three hours of lecture and one hour of discussion per week. Gothic art and architecture from its origins in France about 1130. Emphasis on the related developments of architecture, sculpture, and stained glass at the impact of the early universities and scientific study, and the political role of the visual arts in the early nation states.

160. Renaissance Art in Florence 1400-1600. (4) Four hours of lecture and one hour of discussion per week. A selective survey of major developments in Florentine Renaissance painting, sculpture, and architecture organized by genre. Particular emphasis on the relationship between art and religion and the ideology of Florentine republicanism and ducale absolutism. Issues of gender, the status of artists, and the function, audience, and patronage of art will also be considered.

161. Renaissance Art in Rome 1400-1600. (4) Four hours of lecture and one hour of discussion per week. A selective survey of major developments in Roman Renaissance painting, sculpture, and architecture organized by genre. Particular emphasis on the relationship between art and religion and the ideology of the Venetian commune. Issues of gender, the status of artists, and the function, audience, and patronage of art will also be considered.

162. Renaissance Art in Venice 1400-1600. (4) Four hours of lecture and one hour of discussion per week. A selective survey of major developments in Venetian Renaissance painting, sculpture, and architecture organized by genre. Particular emphasis on the relationship between art and religion and the ideology of the Venetian commune. Issues of gender, the status of artists, and the function, audience, and patronage of art will also be considered.

166. Van Eyck to Brueghel. (4) Three hours of lecture and one hour of discussion per week. The great age of Netherlandish art, from its roots in manuscript illumination through the masters of panel painting (Van Eyck, Van der Weyden, Bosch, Brueghel) up to the time of the iconoclasm of 1566. Focus on the relation of painting to the text, to narrative images: rise of genres; art’s expression of social and economic conditions; and class and gender issues.

170. Southern Baroque Art. (4) Three hours of lecture and one hour of discussion per week. The major artists (among them Caravaggio, Bemini, Velazquez, and Poussin) and the major concerns (including genres such as history painting, landscape, low-life, and notions of imitation and illusionism) of seventeenth century art in Italy, France, and Spain.

172. The Dutch Golden Age. (4) Three hours of lecture and one hour of discussion per week. The rise of a rich visual culture in 17th-century Holland, and the pressing of the ideals, aspirations, and identity of the first bourgeois capitalist society. Rembrandt, Vermeer, and others in the context of contemporary aesthetic conventions (realism, optical) and social issues (domestic values, poverty and wealth, colonialism, national identity).

173. The Age of Rubens. (4) Three hours of lecture and one hour of discussion per week. The culture of early 17th-century Europe as it was known (and created) by the baroque masters and diplomat. Begins in Flanders and travels (with Rubens) to Italy, Spain, France and England, examining politics, religion and visual culture in each place. Key issues include the concept of the world art and politics; crafting social status; workshop practice.

180A. 19th Century Europe: Age of Revolution. (4) Three hours of lecture and one hour of discussion per week. Topics in late 18th- and early 19th-century European art, either focusing on a pertinent theme and/or nation (e.g., Romanticism) or introducing the art of Europe as a whole during this tumultuous period of revolution and reaction.

180B. Nineteenth-Century Europe: Realism and Modernity. (4) Three hours of lecture and one hour of discussion per week. The visual arts in Europe in the mid-19th century, with reference to the capitalist city and its environs. May focus on Paris, or on Paris’s rivalry with other European centers.


181. French Art of the 19th Century. (4) Three hours of lecture and one hour of discussion per week. For- merly 182. Introduction to French art from the Revolu- tion to the First World War. Proceeds chronologically, putting visual art in the context of French political and social development.

182. Histories of Photography. (4) Three hours of lecture and one hour of discussion per week. Formerly 188. Topics in 19th- and 20th-century histories of photo- graphy; for example, photography in relation to modernism, gender, pictorial genres, or consumerism.

183. Art and Colonialism. (4) Three hours of lecture and one hour of discussion per week. Focus on the relationship between visual representation and conquest, colonialism and imperialism. Topics include the history of visual ethnographies, representations and constructions of “race,” exoticism, orientalism, and primitivism.

185A. American Art (1800—Present). (4) Three hours of lecture and one hour of discussion per week. Looking at major developments in architecture, decorative arts, photography, and painting from Romanticism to post-modernism, this course addresses art and its so- cial context over the last two centuries in what is now the United States. Issues include patronage, audience, technology, and the education of the artist as well as style and cultural expression. Field trips.

185B. American Architecture: Domestic Forms. (4) Three hours of lecture and one hour of discussion per week. Taking as a point of departure specific exemplars of domestic art, both vernacular and high-style architectural forms are studied from the perspectives of the history of style, of cultural and social identity, of economics of the class as a whole and the student research projects take a case-study approach. Field trips.

186A. Art in the Early 20th Century. (4) Three hours of lecture and one hour of discussion per week. Pri- marily Europe. May focus on a particular period and pe- riod (e.g., “Art in Paris, 1900-1914, or Art and the First World War” or on a major artistic problem (e.g., Ab- straction and Figuration).

186B. Art in the Mid-20th Century. (4) Three hours of lecture and one hour of discussion per week. Art between the world wars and in the later 1940s and 1950s. The focus may be on Europe or on Europe and U.S. interaction. The culture of the avant-garde, art and politics in the age of Lenin and Hitler, etc.

186C. Art in the Later 20th Century. (4) Three hours of lecture and one hour of discussion per week. A con- sideration of major issues in European and American post-war art to the present day. Emphases include conceptual, video, and performance art, as well as tradi- tional media.

187B. Problems in 20th-Century Sculpture. (4) Three hours of lecture and one hour of discussion per week. An examination of key issues, artists, and works, including sculpture and primitivism, sculpture in mass society, sculpture, the body, and the surreal. Pre- cursor of coursework in history of art recommended.

189. The American Forest: Its Ecology, History, and Representation. (4) Three hours of lecture and one hour of discussion per week. The American forest will be examined in terms of its ecology, history, and representations in paintings, photographs, and literary texts. Issues include the relationships in the American forest in its scientific and economic parameters, as well as the historic, social, and ideological dimensions which have contributed to the evolution of our present attitudes toward the forest. Also listed as Undergrad Interdisciplinary Studies C136, Environ Sci, Policy, and Management C191, and American Studies C112F. (F,SP) Lovell, McBride

190. Special Topics in Fields of Art History. Course may be repeated for credit. Three hours of lecture and one hour of discussion per week. Topics explore themes and problems, often reflect current research interest of the instructor, and supplement regular cur- riculum offerings. Open to all interested students, includ- ing graduate students. Some background in art history desirable. For specific questions concerning preparation for a 190A course, please see individual instructor. Detailed descriptions of current and future offerings in this series available in 416 Doe Library. (F,SP)

190A. Special Topics in American Art and Cultures. (4) Course may be repeated for credit. Three hours of lecture and one hour of discussion per week. Topics explore themes and problems, often reflect current research interests of the instructor, and supplement regular curricular offerings. Open to all interested students, including graduate students. Some background in art history desirable. For specific questions concerning preparation for a 190AC course, please see individual instructor. Detailed descriptions of current and future offerings available in 416 Doe Library. This course satisfies the American Cultures require- ment. (F,SP) Staff

190B. Ancient. (4)

190C. Medieval. (4)

190D. 15th—16th Century. (4)

190E. 17th—18th Century. (4)

190F. 19th—20th Century. (4)

190G. American/British. (4)

190H. Precolumbian/Latin American. (4)

192. Undergraduate Seminar: Problems in Res- search and Interpretation. Course may be repeated for credit. Three hours of seminar per week plus exten- sive outside work. Prerequisites: Primarily for juniors and seniors in the major or consent of instructor. Con- centration on specific problems or works in a particu- lar area of art history. Assigned readings, discussion, and a hours of outside work. For interested students, for interested students, see listings outside 416 Doe Library.

192AC. Undergraduate Seminar: Folk Art in Amer- ica. (4) Three hours of seminar per week plus exten- sive outside work. Prerequisites: Primarily for juniors and seniors in the major or consent of instructor. This seminar will look at specific production and use of architecture, paintings, and quilting within specific communities in what is now the United States. We will look, for instance, at Shaker water- color and design; Puritan painting and city planning; Amish, Hawaiian, and Hmong quilting; the ledger draw- ings and domestic structures of specific Native Amer- ican groups; and the sacred architecture of the His-
panic southwest. Our timeframe spans four centuries but our “geographies” will be very focused. We will consider vernacular or folk production within the context of art history and the economy as well as aesthetic and social theory. This course satisfies the American Cultures requirement. (F,SP) Lovell

192B. Ancient. (4)

192C. Medieval. (4)

192D. 15th-16th Century. (4)

192E. 17th-18th Century. (4)

192F. 19th-20th Century. (4)

192G. American/British. (4)

192H. Museum Studies. (4)

193. Directed Research. (4) Prerequisites: Consent of instructor and departmental adviser. Intended for advanced undergraduates wishing to continue research on topics already begun in a lecture or seminar or to pursue at a high level specialized topics not ordinarily covered in the curriculum. Usually results in a substantial paper. For general independent study see 199; for honors research, see H195.

194. Museum Internship. (4) Course may be repeated for a maximum of 12 units. 240-300 hours of fieldwork per semester plus conferences. Must be taken on a passed/not passed basis. Prerequisites: Approval of undergraduate adviser; 192H recommended. Study and practical professional experience recommended for students who have attained a level of proficiency and innovative perspective, designed for candidates for higher degrees. Offerings vary from year to year. Students should consult the department’s “Announcement of Classes” for offerings before the beginning of the semester.

203. Seminar in Material Culture: The Interpretation of Objects. (4) Course may be repeated for credit three times. Three hours of seminar per week plus extensive outside work. This seminar looks at both material cultural theory and the practice of interpreting objects in the West and in non-Western cultures. May be taken for 2.0 units on a satisfactory/unsatisfactory basis with consent of instructor. Prerequisites: Graduate standing and consent of instructor.

204. Seminar in Classical Archaeology and Ancient Art. (4) Three hours of seminar per week. Prerequisites: Working knowledge of Latin, Greek, and German or French or Italian. This seminar is intended for students pursuing research in both art and archaeology—archeologists and non-archeologists—to the discipline of classical archaeology, history, and evolution, and its research tools and bibliography. Since it is both impossible and undesirable to adjust the entire content of one semester, after two introductory lectures on the history of the field, we will address a selection of topics that seems representative of its concerns. Also listed as Classics C204, (SP) Halley, Stewart

209. Seminar in Medieval Art. (4) Course may be repeated for credit two times. Three hours of seminar per week plus extensive outside work. May be taken for 2.0 units on a satisfactory/unsatisfactory basis with consent of instructor. Prerequisites: Graduate standing and consent of instructor.

234. Seminar in Japanese Art. (4) Course may be repeated for credit. Three hours of seminar per week plus extensive outside work. May be taken for 2.0 units on a satisfactory/unsatisfactory basis with consent of instructor. Prerequisites: Graduate standing and consent of instructor.

254. Seminar in Early Medieval Art. (2,4) Course may be repeated for credit. Three hours of seminar per week plus extensive outside work. May be taken for 2.0 units on a satisfactory/unsatisfactory basis with consent of instructor. Prerequisites: Graduate standing and consent of instructor.

257. Seminar in Romanesque and Gothic Art. (2,4) Course may be repeated for credit. Three hours of seminar per week plus extensive outside work. May be taken for 2.0 units on a satisfactory/unsatisfactory basis with consent of instructor. Prerequisites: Graduate standing and consent of instructor.

258. Seminar in Late Medieval Art in Northern Europe. (2,4) Course may be repeated for credit. Three hours of seminar per week plus extensive outside work. May be taken for 2.0 units on a satisfactory/unsatisfactory basis with consent of instructor. Prerequisites: Graduate standing and consent of instructor.

260. Seminar in Italian Renaissance Art. (2,4) Course may be repeated for credit. Three hours of seminar per week plus extensive outside work. May be taken for 2.0 units on a satisfactory/unsatisfactory basis with consent of instructor. Prerequisites: Graduate standing and consent of instructor.

262. Seminar in European Art. (2,4) Course may be repeated for credit. Three hours of seminar per week plus extensive outside work. May be taken for 2.0 units on a satisfactory/unsatisfactory basis with consent of instructor. Prerequisites: Graduate standing and consent of instructor.

270. Seminar in Baroque Art. (2,4) Course may be repeated for credit. Three hours of seminar per week plus extensive outside work. May be taken for 2.0 units on a satisfactory/unsatisfactory basis with consent of instructor. Prerequisites: Graduate standing and consent of instructor.

271. Seminar in 19th-Century Art. (2,4) Course may be repeated for credit. Three hours of seminar per week plus extensive outside work. May be taken for 2.0 units on a satisfactory/unsatisfactory basis with consent of instructor. Prerequisites: Graduate standing and consent of instructor.

275. Seminar in 20th-Century Art. (2,4) Course may be repeated for credit. Three hours of seminar per week plus extensive outside work. May be taken for 2.0 units on a satisfactory/unsatisfactory basis with consent of instructor. Prerequisites: Graduate standing and consent of instructor.

286. Seminar in 20th-Century Painting and Sculpture. (2,4) Course may be repeated for credit. Three hours of seminar per week plus extensive outside work. May be taken for 2.0 units on a satisfactory/unsatisfactory basis with consent of instructor. Prerequisites: Graduate standing and consent of instructor.

289. Seminar in American Art. (2,4) Course may be repeated for credit. Three hours of seminar per week plus extensive outside work. May be taken for 2.0 units on a satisfactory/unsatisfactory basis with consent of instructor. Prerequisites: Graduate standing and consent of instructor.

290. Special Topics in Fields of Art History. (2,4) Course may be repeated for credit. Three hours of seminar per week plus extensive outside work. Two units to be graded on a satisfactory/unsatisfactory basis by consent of instructor. Four units to be graded on a letter-grade basis. Prerequisites: Graduate standing and consent of instructor. Topics explore themes and problems, often reflect current research interests of the instructor, and stress technical and methodological matters. For descriptions of current and future offerings, see the graduate study catalog. The department’s “Announcement of Classes” should be consulted before enrolling.

291. Judith Strachan Graduate Travel Seminar in Art History. (4) Course may be repeated for credit. Three hours of seminar per week plus extensive outside work. May be taken for 2.0 units on a satisfactory/unsatisfactory basis by consent of instructor. Prerequisites: Graduate standing and consent of instructor. This course is for students interested in travel or study in one of the department’s global field schools. It may be repeated for credit. Three hours of seminar per week plus extensive outside work. May be taken for 2.0 units on a satisfactory/unsatisfactory basis by consent of instructor. Prerequisites: Graduate standing and consent of instructor.

292. Directed Dissertation Research. (3-12) Course may be repeated for credit. Independent study. Must be taken on a satisfactory/unsatisfactory basis by consent of instructor. Prerequisites: Graduate standing and consent of instructor. This course explores specific topics, topics, and problems, reflects current research interests of the instructor, and stresses technical and methodological matters. Details of current and future offerings will be published in the catalog. The department’s “Announcement of Classes” should be consulted before enrolling.

299. Special Study for Graduate Students in the History of Art. (1-12) Course may be repeated for credit. Individual conferences. Must be taken on a satisfactory/unsatisfactory basis by consent of instructor. Prerequisites: Graduate standing and consent of instructor.

601. Individual Study for Master’s Students in the History of Art. (1-12) Course may be repeated for credit. Course does not satisfy unit or residence re-
Asian American Studies

(College of Letters and Science)

Program Office: 506 Barrows Hall, (510) 643-0796
ethnicstudies.berkeley.edu
Chair: Beatriz Manz, Ph.D.

Professors

Evelyn N. Glenn, Ph.D.
Elaine H. Kim, Ph.D.
Sau-ling C. Wong, Ph.D.
Honami T. Takaki (Emeritus), Ph.D.

Associate Professors

Catherine C. Ohy, Ph.D.
M. Michael A. Omori, Ph.D.
Khatharyn Um, Ph.D.
L. Ling-chi Wang (Emeritus), M.A.

Lecturers

Anna Leong, M.A.
Jerrold H. Takahashi, Ph.D.

Undergraduate Major Adviser: Mr. St. Germaine.

Undergraduate Program

The Asian American Studies Program offers a unified and comprehensive undergraduate curriculum which seeks to make at least three major contributions. First, it prepares students for positions of social and leadership in Asian American communities. To do this, the program draws heavily on the curricula of such schools and departments as Education, Public Health, Law, and Sociology. Second, the program itself offers instruction in those areas relating to the special needs of Asian American communities. Second, the program explores the hitherto neglected aspects of the cultural, political, and historical experience of Asians in America. In doing so, it provides the undergraduate with thorough instruction on the experience of Asians in the United States, and prepares students to participate in and contribute to the work in their own and allied fields. Third, the program broadens the curriculum at Berkeley to include instruction which reflects the conditions of Asians and other Third World people living in America.

Major Requirements

Lower Division

Ethnic Studies 10A, 10B; Asian American Studies 20A, 20B.

Upper Division

Ethnic Studies 101A, 101B, and 103; completion of four elective courses from Asian American Studies: 120, 121, 122, 123, 124, 125, 126, 127, 129, 130, 131, 141, 142, 145, 146, 150, 151, 165, 171, 172, 175, 176, 177, 178, 179, 180, 181, 183, 190, 190AC; Asian American Studies 197 (4 units cumulative).

Honors

The Asian American Studies Program provides an option leading to the A.B. degree with honors. To be recommended for honors, students must have (1) completed at least 30 units and two semesters with grade-point averages of at least 3.3 for all work undertaken in the Asian American Studies Program, and (2) been nominated specifically for honors by the Department of Ethnic Studies chair and the Asian American Studies coordinator upon recommendation by the faculty adviser for the major. In addition, after visiting sections early in the semester, the senior honors seminar for Asian American studies majors. To graduate with an A.B. with honors, students must obtain at least a 3.3 GPA for all coursework undertaken at the University.

The Minor

Requirements

Five elective courses from Asian American Studies. (F,SP) Prerequisites: 20A or equivalent. Restriction to freshmen and sophomores; consent of instructor. University organized and supervised field program involving experiences in schools, school-related activities, community and community-related activities. (F,SP) 97. Field Studies in Asian American Communities. (1-3) Course may be repeated for credit. Three hours of lecture and one hour of discussion per week. Must be taken on a passed/not passed basis. Prerequisites: At discretion of instructor. Sophomore seminars are small interactive courses offered by faculty members in departments all across the campus. Sophomore seminars offer opportunity for close, regular intellectual contact between faculty members and students in their major. The topics vary from department to department and semester to semester. Enrollment limited to 15 sophomores. (F,SP) 98. Supervised Group Study. (1-3) Course may be repeated for credit. Enrollment is restricted; see the Introduction to Courses and Curriculum section of this catalog. Three hours of work per week. Must be taken on a passed/not passed basis. Prerequisites: Consent of instructor. Individual research on a topic which leads to the writing of a major paper. Regular meetings with faculty sponsor. (F,SP) Staff

Upper Division Courses

R2A. Reading and Composition. (3) Three hours of lecture and one hour of tutorial per week. Prerequisites: 1, UC Entry Level Writing Requirement or equivalent. Formerly 2A. Through the study of the literary, political, social and psychological dimensions of representative works of Asian American literature, this course introduces students to close textual analysis, fosters critical judgment, and reinforces academic writing skills. Satisfies the first half of the Reading and Composition requirement. (F,SP)

R2B. Reading and Composition. (3) Three hours of lecture and one hour of tutorial per week. Prerequisites: 2A, English 1A or equivalent. Formerly 2B. This course examines literary works by Asian American, African American, Chicano, and Native American writers in their political and social contexts, focusing on similarities and differences between the experiences of ethnic minorities in the U.S. Emphasis is on literary interpretation and sustained analytical writing. Satisfies the second half of the Reading and Composition requirement. (F,SP)

20A. Introduction to the History of Asians in the United States. (4) Three hours of lecture and one hour of discussion per week. Introductory comparative analysis of the Asian American experience from 1848 to the present. Topics include the Asian American perspective; cultural roots; immigration and settlement patterns; labor, legal, political, and social history. (F,SP)

20B. Introduction to the Contemporary Issues in the Asian American Communities. (4) Three hours of lecture and one hour of discussion per week. An introduction to Asian American communities and the social, economic, and political issues they confront. The diverse range of communities, both suburban and urban, will be surveyed and situated within a domestic and global context. (F)

39. Freshman/Sophomore Seminar. Course may be repeated for credit as topic varies. Seminar format. Sections 1-2 to be graded on a letter-grade basis. Sections 3-4 to be graded on a passed/not passed basis. Prerequisites: Priority given to freshmen and sophomores. Freshman and sophomore seminars offer lower division students the opportunity to explore an intellectual topic with a faculty member and a group of peers in a small, seminar setting. These seminars are offered in all campus departments; topics vary from department to department and from semester to semester.

84. Sophomore Seminar. (1,2) Course may be repeated for credit as topic varies. One hour of seminar per week per unit for fifteen weeks. One and one half hours of seminar per week per unit for 10 weeks. Two hours of seminar per week per unit for eight weeks. Three hours of seminar per week per unit for five weeks. Sections 1-2 to be graded on a passed/not passed basis. Sections 3-4 to be graded on a letter-grade basis. Prerequisites: At discretion of instructor. Sophomore seminars are small interactive courses offered by faculty members in departments all across the campus. Sophomore seminars offer opportunity for close, regular intellectual contact between faculty members and students in their major. The topics vary from department to department and semester to semester. Enrollment limited to 15 sophomores. (F,SP)

120. Comparative History of Asian American Experiences in America. (4) Three hours of seminar per week. Prerequisites: 20A or equivalent. Analysis of the similarities and dissimilarities of the Asian experience in America; methods of comparative approach to Asian American history; common Asian American experiences in areas such as immigration, labor, economic development, race relations, community institutions and development. Occupational patterns will be analyzed and compared. (SP)

121. Chinese American History. (4) Three hours of lecture and one hour of discussion per week. Prerequisites: 20A or equivalent. Chinese American history, 1848 to present. Topics include the influence of traditional values, Eastern and Western; patterns of immigration and settlement; labor history; the influence of public policy, foreign and domestic, on the Chinese individual and community. (SP)

122. Japanese American History. (4) Three hours of lecture and one hour of discussion per week. Prerequisites: 20A or equivalent. This course will be presented as a seminar with selected topics in order to give students an opportunity to participate in the dynamics of the study of Japanese American history. Topics include immigration, anti-Japanese racism, labor, concentration camps, agriculture, art and literature, and personality and culture. (SP)

123. Korean American History. (4) Three hours of lecture and one hour of discussion per week. Prerequisites: 20A or equivalent. Koreans in America from 1876 to the present. Topics include comparative immigration and settlement patterns; labor and socio-economic life; political activities; community organization; and issues related to the contemporary population influx. (SP)

124. Filipino American History. (4) Three hours of lecture and one hour of discussion per week. Prerequisites: 20A or equivalent. Topics include consequences of the Spanish-American War on Filipino em...
igitation; conditions in Hawaii and California and the need for Filipino labor; community development; changing relations between the U.S. and the Philippin- e Islands; effective of independence movement and Pacific War II on Pilipino Americans; and contemporary is- sues. (F,SP)

125. Contemporary Issues of Southeast Asian Refugees in the U.S. (4) Three hours of lecture and one hour of discussion per week. Prerequisites: 20A or equivalent. This course will examine Southeast Asian migration and resettlement in the U.S. in the context of the United States involvement in Vietnam, Laos, and Cam- bodia during the Vietnam War. It will also address the post-war “legacies” and their impact on the societies and economies of the countries of the Southeast Asian neighbor- ing states in the region. Asylum politics and refugee camp experiences will be addressed in the discussion of the formation of U.S. resettlement policies and of the adaptation of Southeast Asian refugees. (F,SP)

127. South Asian American Historical and Contem- porary Issues. (4) Course may be repeated for credit. Three hours of lecture per week. Prerequisites: 20A or equivalent. Examines immigration and social history of South Asian Americans from the early 20th century to the present. Focuses on the development of South Asian American communities within the social, political and eco- nomic contexts of South Asia and the U.S.

130. Asian Americans and Foreign Policy. (4) Three hours of lecture and one hour of discussion per week. Prerequisites: 20A or consent of instructor. This course is an examination of the political, economic, and cultural relations between the United States and Asia and their implications for Asian American communities. In- analyzing interstate relations, students will gain insight into U.S. policies and interests in Asian-Pacific and the interplay of internal and external forces that shaped the Asian American experience and influenced the emer- gence and development of Asian American communi- ties. (F,SP)

141. Law in the Asian American Community. (4) Three hours of lecture and one hour of discussion per week. Prerequisites: 20A or consent of instructor. This course will examine the political, economic, and social implications of the United States immigration law and its impact on Asian American communities and will attempt to analyze the roles and effects of law, class, and race in American society. May be taken with 197.

145. Politics, Public Policy, and Asian American Communities. (4) Three hours of lecture and one hour of discussion per week. Prerequisites: 20A or 20B. An examination of the purpose, power, and function of the federal government and its role in the lives and political future of Asian American community. The course presents a range of contemporary issues to illustrate how government in- stitutions and the Asian community define issues and respond to political challenges.

146. Asian Americans and Education. (4) Three hours of lecture and one hour of discussion per week. This course examines the historical and contemporary issues which shape the educational experiences of Asian Americans. Critical issues such as bilingual ed- ucation, affirmative action, immigration, and the assimilation of Asian immigrants as well as theoretical models of Asian American academic success will be explored and critically analyzed. (SP, Staff)

150. Gender and Generation in Asian American Families. (4) Three hours of lecture and one hour of discussion per week. Prerequisites: 20A or 20B. The influence of age, gender, cohort, immigration history, community structure, class and eco- nomic status, and race on gender and generational relations in the Asian American family. (SP)

151. Asian American Women: Theory and Experi- ence. (4) Three hours of lecture and one hour of discussion per week. Prerequisites: Consent of instructor. Examines the historical and contemporary experiences of Asian American women in relation to work, sexuality, intellectual and artistic activity, and family and com- munity life as they inform the development of Asian Ameri- can feminist thought and its relation to cultural na- tionalism. (SP)

165. Research Methodologies in Asian American Communities. (4) Three hours of lecture and one hour of discussion per week. Prerequisites: 20A or 20B. App- roaches to research in the Asian American commu- nity with emphasis on the San Francisco Bay Area. Problems of research design, measurement, and data collection, processing, and analysis will be considered. (SP)

171. Asian Americans in Film and Video. (4) Three hours of lecture and one hour of discussion per week. Prerequisites: Consent of instructor. Introduces stu- dents to films and videos by and about Asian Americans; presents an overview of the development of the Asian American media arts field in relation to current cultural theories and American film history and theory. (F,SP)

172. Asian American Literature. (4) Course may be repeated for credit with different topics. Three hours of lecture and one hour of discussion per week. Intro- duces students to representative works of Asian Ameri- can literature by writers from the major ethnic sub- groups; examines the works in their sociohistorical context; analyzes thematic and formal elements in- volving experiences in schools, school-related activi- ties, short fiction, poetry), essays, and films from the Philippines and the United States. Emphasis will be given to the development of literary tradition. Primarily English-lan- guage works, some translations from Chinese. (F,SP)

173. Asian American Art. (4) Course may be repeated for credit with different topics. Three hours of lecture and one hour of discussion per week. Prerequisites: Consent of instructor. Examines the various strategies of (re-)narrating colo- nial/immigrant experience in three genres: literature (e.g., autobiography, biography, memoir), ethnic and racial identity, and subject formation will be discussed. (F,SP, Staff)

174. Genre in Asian American Literature. (4) Three hours of lecture and one hour of discussion per week. Prerequisites: Consent of instructor. Investigates specific genres in Asian American literature (e.g., autobiography, biography, memoir), and examines the formal characteristics of these writings. (F,SP, Staff)

175. Contemporary Narratives on the Philippines and the United States. (3) Three hours of lecture and one hour of discussion per week. The course will ex- amine Chinese American literature by writers from the major ethnic sub- groups; examines the works in their sociohistorical context; analyzes thematic and formal elements in- volving experiences in schools, school-related activi- ties, short fiction, poetry), essays, and films from the Philippines and the United States. Emphasis will be given to the development of literary tradition. Primarily English-lan- guage works, some translations from Chinese. (F,SP)

176. Gender in Asian American Literature. (4) Three hours of lecture and one hour of discussion per week. Prerequisites: Consent of instructor. Examines the various strategies of (re-)narrating colo- nial/immigrant experience in three genres: literature (e.g., autobiography, biography, memoir), and examines the formal characteristics of these writings. (F,SP, Staff)

177. Asian American Art: Remapping Modernity: Art and Artists in the 20th Century. (3) Three hours of seminar per week. Seminar in contemporary Asian American visual art, with focus on the politics of pro- duction and reception. Works by such artists as Y. David Chung, Hung Liu, Yong Soon Min, Long Nguyen, and Manuel Ocampo will be studied. (F,SP)

178. Gender and Sexuality in Asian American Lit- erature. and Contemporary Narratives on the Philippines and the United States. (3) Three hours of discussion per week. Prerequisites: Consent of instructor. Explores gender/sexuality issues in Asian American literature and culture, such as simul- taneous cross-cultural and cross-linguistic experiences; diaspora; sexual identification and expression; and the social, political, and cultural implications of these writings. (F,SP)
Asian Studies
(College of Letters and Science)

Undergraduate Office: 101 Stephens Hall, (510) 643-5814
Graduate Office: 2222 Fulton Street, Room 524, (510) 642-0333
ieas.berkeley.edu/gas
Chair and Head Adviser: Bonnie C. Wade, Ph.D.
Advisers
Marin Backstrom (Institute of East Asian Studies)
Andrew Barbary (History)
Munis Farsakh (South and Southeast Asian Studies)
Jeffrey Hadler (South and Southeast Asian Studies)
Michael Nygren (History)
Robert Sharp (East Asian Languages and Culture / Buddhist Studies)
Bonnie Wade, Chair (Music)
Carolyn Wakeman (Journalism)

Group Major in Asian Studies

The undergraduate group major in Asian studies is a rigorous but flexible interdisciplinary program designed to assist students to take advantage of the rich course offerings in the Asian field campuswide in a way that is not available through departments. Each student's program is coordinated to assure deeper knowledge of one East Asian culture and language and also a broad range of inter-area and interdisciplinary perspectives.

Prerequisite Courses in the Major

Students petitioning to enter the group major must have completed (grade C or better) the following:

2. one history course (choose one): History 6A (China, Early empires); History 6B (Modern China); History 11 (India); History 14 (Japan); SEAsian 10A (China, Early empires); SEAsian 10B Southeast Asia (mainland); SEAsian 10B Southeast Asia (insular).

Additional Major Requirements

Once accepted in the major, the student is expected to select an area focus (Area I—China; Area II—Japan) and a disciplinary cluster within that area. The following coursework is required:

1. Two years of language appropriate to the area focus. After the second year, further study of the language in the upper division level is encouraged or other courses and will count toward the major unit requirement.
2. Completion of a minimum of 30 units of upper division coursework.
3. Two courses must be in the same discipline. One of the two must be a course whose primary purpose is to introduce the theories and methods of the discipline.
4. One upper division course must be a course in Asian history appropriate to the student's area focus.
5. The remaining five courses needed to fulfill the 30-unit requirement may be selected from the categories of "other courses" and "inter-area courses" listed below. At least one course must focus on a geographical area outside the student's area focus.

Area Focus

China

1. Students must complete two years of Chinese (Mandarin). Further study of the language is encouraged and will count toward the major unit requirement.
2. Disciplinary theory and methods course (choose one): Anthropology 114, 141, 144, 169B, 170; Chinese 142; Economics 100A, 100B, 101A, 101B; Film 100; History 103F; History of Art 100, 192; Political Science 112A, 112B, 112C, 137A; Sociology 101A, 101B, 101C, 105.
3. Other courses (one course must be in the same discipline as the theory and methods course). Please see major adviser to determine appropriate courses. Anthropology 123D, 170; Asian Studies 147, 148, 149; Chinese 101, 102, 120, 122, 132, 134, 136, 138, 140, 155, 156, 157, 181A-181B, 183, 185; Economics 162, 171; Film 160 (when on China); Geography 166; History 100 (when on China), 116A, 116B, 116C; History of Art 130A, 130B, 131A, 131B, 134; Legal Studies 161; Music 134A; Philosophy 152; Political Science 126, 129C, 137A, 137B, 143A, 143B, 143C, 144A; Sociology 172, 183, 183.
4. History requirement (choose one): History 100 (when on China), 103F (when on China), 116A, 116B, 116C.

Japan

1. Students must complete two years of Japanese. Further study of the language is encouraged and will count toward the major unit requirement.
3. Other courses (one course must be in the same discipline as the theory and methods course). Please see major adviser to determine appropriate courses. Economics 171; Film 160 (when on Japan); History 118A, 118B, 118C, 119; History of Art 134, 135A, 135B; Japanese 101, 102, 120, 130, 132, 140, 142, 144, 155, 159, 162 (this course counts as Linguistics), 182A-182B, 186; Music 134A, 134B; Political Science 143A, 143B, 144A.
4. History requirement (choose one): History 100 (when on Japan), 103F (when on Japan), 118A, 118B, 118C.

Graduate Program

The Group in Asian Studies offers an M.A. degree program in Asian studies. Students in the program emphasize one of four areas of Asia: East Asia (China), Northeast Asia (Japan/Korea), Southeast Asia, or South Asia. The group, in cooperation with the Graduate School of Journalism, the Walter A. Haas School of Business, and Boalt Hall, School of Law, respectively, also offers a concurrent M.J./M.A. in journalism and Asian studies, and a concurrent J.D./M.A. in law and Asian studies. The group is authorized to award the degree of Doctor of Philosophy in Asian studies, but for practical and academic reasons this degree program is very restricted. Applicants with specific disciplinary interests should apply to a particular department rather than to the interdisciplinary group. Only those who have first completed the M.A. with the Group in Asian Studies may apply to the Ph.D. program.

Lower Division Courses

10. Introduction to Asia. (4) Three hours of lecture and one hour of discussion per week. Formerly 10A. This course is designed to interest students in Asian cultures early in their undergraduate studies. Topics such as trade, social and political formations, religions, food, and expressive culture that have been important in history as well as in contemporary times in East, South, and Southeast Asia will serve as unifying themes. Comparative thinking across regions of Asia and the perspectives of multiple disciplines will be brought to bear on the themes.

98. Directed Group Study. (1-4) Course may be repeated for credit. Enrollment is restricted; see the Introduction to Courses and Curricula section of this catalog. Group meetings to be arranged. Must be taken on a passed/not passed basis. Prerequisites: Consent of Instructor required. Group discussion, research and reporting on selected topics.

Optional Senior Thesis

Qualified students may complete a senior thesis approximately 50 pages in length under the supervision of the major adviser and a faculty member. Three units of upper division credit in Asian Studies 196 will be given for completion of the thesis.

Honors Program

Open to seniors in the group major in Asian Studies whose grade-point average is 3.5 or higher in all university courses and 3.6 or higher in the major. The program consists of completion of Asian Studies courses H195A-H195B (3.3), which includes the writing of an honors thesis. The honors thesis is expected to be a substantial research paper, both in its length and originality; it is read by two faculty members.

Minor Program in Asian Studies

Students in the College of Letters and Science may complete one or more minors of their choice, normally in a field both academically and administratively distinct from their major.

There are three minor program options in Asian Studies: Chinese studies, Japanese studies, and Korean studies. These programs give students an introduction to the study of one region of Asia through social science and humanities courses. Minimum requirement is taking two or three Asian studies courses with a C or better in each course. At least three of the courses must be completed at Berkeley; only one may overlap with those credited to the student’s major. There is no Asian language requirement for the minor. Two upper division language/literature courses may be used. For specific courses that satisfy minor requirements, see the department.
Astronomy / 135

Upper Division Courses

149. Media and Society in Contemporary China. (4) Three hours of lecture per week. Prerequisites: Consent of instructor. This lecture and discussion course examines the crucial role played by the news media in the political process, and discusses the changing role of the mass media in contemporary Chinese society. (F,SP) Staff

150. Special Topics. (4) Course may be repeated for credit. Three hours of lecture per week. Prerequisites: Consent of instructor. Advanced research in current issues or regions of Asian Studies. The course will focus on specific areas or topics with appropriate comparative material included. Topics change each semester. (F,SP) Staff

160. Undergraduate Seminar in Asian Studies. (4) Course may be repeated for credit as topic varies. Three hours of seminar per week. A reading and research seminar for undergraduate students. Topics will vary by semester. (F,SP)

H195A-H195B. Senior Honors. (3-3) Individual study supervised by two faculty members. Credit may be obtained on completion of sequence. Prerequisites: Open to seniors in the major in Asian Studies whose GPA is 3.5 or higher in all university work and 3.8 or higher in the major. Supervised readings or field research on a significant problem in Asian Studies whose GPA is 3.5 or higher in all university work and 3.8 or higher in the major. (SP)

196. Senior Thesis. (3) A maximum of 3 units of credit may be earned on satisfactory/un satisfactory basis. Must be taken on a satisfactory/un satisfactory basis. (F,SP) Staff

197. Field Study. (1-4) Course may be repeated for credit. Enrollment is restricted; see the Introduction to Courses and Curricula section of this catalog. Individual meetings to be arranged. Must be taken on a passed/not passed basis. Prerequisites: Upper division standing and consent of instructor. Supervised experience relevant to specific aspects of Asian studies in off-campus locations. Regular individual meetings with faculty sponsor and written reports required. (F,SP) Staff

200. Directed Group Study. (1-7) Course may be repeated for credit. Enrollment is restricted; see the Introduction to Courses and Curricula section of this catalog. Group meetings to be arranged. Must be taken on a passed/not passed basis. Prerequisites: Upper division standing and consent of instructor. Supervised group study of special topics approved by the chair of the Group in Asian Studies. (F,SP)

199. Independent Study. (1-4) Course may be repeated for credit. Enrollment is restricted; see the Introduction to Courses and Curricula section of this catalog. Individual meetings to be arranged. Must be taken on a passed/not passed basis. Prerequisites: Written proposal must be approved by faculty adviser. Directed individual study on topics approved by the chair of the Group in Asian Studies. (F,SP) Staff

Graduate Courses

201. Asian Studies Proseminar. (1) Course may be repeated for credit. Enrollment is restricted; see the Introduction to Courses and Curricula section of this catalog. Individual meetings to be arranged. Must be taken on a satisfactory/un satisfactory basis. Prerequisites: Consent of instructor. This course is required of all first-year graduate students and supervised by a regular faculty member. The seminar will familiarize students with faculty, their Asian interests, research methods, and the courses they teach. It consists of presentations by faculty on their past, present, and future research. (F,SP) Staff

202. Directed Research. (1) Course may be repeated for credit. Two hours of consultation per meeting for eight weeks. Must be taken on a satisfactory/un satisfactory basis. Prerequisites: Consent of instructor. Two hours of consultation per meeting for eight weeks. Must be taken on a satisfactory/un satisfactory basis. (F,SP) Staff

204. Directed Group Study. (2-6) Group meetings to be arranged. Must be taken on a satisfactory/un satisfactory basis. Group study of selected topics that vary from term to term. (F, SP) Staff

209. Independent Study. (1-7) Individual conferences with a graduate student who is working on a satisfactory/un satisfactory basis. Prerequisites: Consent of instructor. Directed reading in subject matter not covered in scheduled seminar offerings. (F,SP) Staff

Astronomy (College of Letters and Science)

Department Office: 601 Campbell Hall, (510) 642-5275 astroph.berkeley.edu
Chair: Donald Backer, Ph.D.
University Professor
Frank H. Shu (Emeritus), Ph.D. Harvard University. Theoretical astrophysics of protoplanetary disks, black holes, galaxy formation, and telescopes. (F,SP)

Josh Bloom, Ph.D. California Institute of Technology. Disks and accretion in black holes and star formation. (Emeritus)

Eliot Quataert, Ph.D. Harvard University. Compact objects, black holes, epoch of reionization, instrumentation. (F,SP)

Donald C. Backer, Ph.D. Cornell University. Neutron stars, black holes, radio, Boulder, Star formation, magnetic activity, brown dwarfs, high resolution spectroscopy. (F,SP)

C. Stuart Bowyer, Ph.D. Catholic University of America. Ultraviolet astronomy from space. (Emeritus)

†Imke de Pater, Ph.D. University of Leiden. Solar system, radio sources. (Emeritus)

R. JayFreeman, Ph.D. University of California, Berkeley. Origin and evolution of galaxies, comets, large-scale structure. (Emeritus)

**Martin White, Ph.D. Yale University. Physics teaching or technical positions in industry. During the first two undergraduate years, students must, in addition to fulfilling certain specific requirements of the College of Letters and Science, pursue studies that will prepare them for future work in astronomy or in fields that benefit from an education in a physical science, such as science teaching or technical positions in industry. Specifically, the department requires that during the first two years, and in any case before declaring the major, students take courses that provide a thorough understanding of the following:

1) Basic principles of physics: mechanics, properties of matter, electricity and magnetism, heat, wave motion, sound and light (Physics 7A, 7B, 7C);
2) Basic mathematics: analytic geometry, differential and integral calculus, differential equations, and linear algebra (Math 1A-1B, followed by Math 53 and 54); and
3) An introduction to astrophysics (Astronomy 7A-7B).

The last two years, leading to the A.B. degree in astrophysics, are spent in more intensive work, primarily in the fields of astronomy, physics, earth and planetary sciences. The specific plan of study to be followed by each student is to be worked out in consultation with the departmental advisers for the major, and must include 30 units of upper division work in astronomy and allied fields. For students who are double majors in astrophysics and another science, the upper division requirement is reduced to 24 units.

All students are required to take at least one semester of undergraduate laboratory (Astronomy 120, 121, 122, 123) and two senior-level courses (Astronomy 160, C161, C162). Many students pursuing a dual-major of Astrophysics and Physics will be most interested in 160 and C161. Double-majors in Astrophysics and Earth and Planetary Science will be most interested in 160 and C162. With the approval of a graduate advisor, outstanding students may take a graduate course in Astronomy.
Honors Program. For honors in astrophysics a student must fulfill the following additional requirements: 1) maintain a grade-point average of at least 3.5 in all courses in astronomy and related fields, and an overall grade-point average of at least 3.3 in the University; 2) carry out an individual research or study project, involving at least three units of H195. The student's project is chosen in consultation with a departmental advisor, and the written report is judged by the student's research supervisor and by a departmental advisor.

For more detailed or complete information about the astrophysics major, an undergraduate handbook is available through the undergraduate assistant in the department.

The Minor in Astrophysics

The minor program consists of two of (120, 121, or 122), C162, 160, C161 and three upper division electives. Courses 7A and 7B are recommended for the minor but not required.

Graduate Programs

The graduate program is aimed at the Ph.D. degree in astrophysics. Students not already having majored in astronomy, although some background in astronomy is desirable. A strong background in physics, however, is essential.

In addition to the qualifying examination required by the University, the department requires students to pass a personal oral examination which tests breadth and depth of knowledge of three specialized research areas chosen by the student from a list of about 10. Students choose, with the aid of their advisor, courses and independent research which are useful in preparing for the preliminary and qualifying examinations. In addition, students must pass two graduate courses taken outside the department and must pass a one-year teaching and research experience. The program normally takes five to six years. Additional information on the program is available upon request from the department.

The requirements for the M.A. degree are 24 units in graduate or upper division undergraduate courses (12 units in graduate courses) and the preliminary examination.

Lower Division Courses

3. Descriptive Cosmology. (2) Two hours of lecture per week. Non-mathematical description of research and results in modern extragalactic astronomy and cosmology. We read the story of the discovery of the principles of our Universe. Bloom, Davis, Ma

7A. Introduction to Astrophysics. (4) Students will receive 2 units of credit for both 7A-7B after taking 10. Three hours of lecture and one hour of laboratory per week. Prerequisites: Physics 7A-7B (7B can be concurrent), or consent of instructor. This is the first part of an overview of astrophysics, with an emphasis on the way in which physics is applied to astronomy. This course deals with the solar system and stars, while 7B covers galaxies and cosmology. Solar system topics include orbital mechanics, geology of terrestrial planets, planetary atmospheres, and the formation of the solar system. The study of stars will treat determination of observables, properties, structure, and evolution. The physics in this course includes mechanics and gravitation; kinetic theory of gases; properties of radiation and radiative energy transport; quantum mechanics of photons, atoms, and electrons; and magnetic fields. (F,SP) Basri, Blitz, Heiles, Graham, Marcy

7B. Introduction to Astrophysics. (4) Students will receive 2 units of credit for 7B after taking 10; 6 units of credit for both 7A-7B after taking 10. Three hours of lecture and one hour of laboratory per week. Prerequisites: Physics 7A-7B (7B can be concurrent) or consent of instructor. This is the second part of an overview of astrophysics, which begins with 7A. This course covers the Milky Way galaxy, star formation and the interstellar medium, galaxies, black holes, quasars, dark matter, the expansion of the universe and its large-scale structure, and cosmology and the Big Bang. This course is aimed at students who are interested in taking 7A and 7B, and it does not assume any previous knowledge of physics or astronomy. (F,SP) Basri, Blitz, Heiles

10. Introduction to General Astronomy. (4) Students will receive no credit for 10 after taking 7A or 7B. Three hours of lecture and one hour of discussion per week. A description of how modern astronomy is done, with emphasis on the structure and evolution of stars, galaxies, and the Universe. Additional topics optionally discussed include quasars, pulsars, black holes, and extraterrestrial communication, etc. Individual instructor's synopses available from the department. Also listed as Letters and Science C70U. (F) Filippenko

C12. The Planets. (3) Three hours of lecture per week. A tour of the mysteries and inner workings of our solar system. What are planets made of? Why do they orbit the sun the way they do? How do planets form? Why are they black and why do some bizarre moons have oceans, volcanoes, and ice floes? What makes the Earth hospitable for life? Is the Earth a common type of planet or some cosmic quirk? This course will introduce basic physics, chemistry, and biology to understand our place made of? Why are they black and why do some bizarre moons have oceans, volcanoes, and ice floes? What makes the Earth hospitable for life? Is the Earth a common type of planet or some cosmic quirk? This course will introduce basic physics, chemistry, and biology to understand our place in the universe. Also listed as Letters and Science C70U. (F,SP)

24. Freshman Seminars. (1) Course may be repeated for credit as topic varies. One hour of seminar per week. Section 1 to be graded on a pass/no pass basis. Section 2 to be graded on a letter-grade basis. This Berkeley Seminar Program has been designed to provide new students with the opportunity to explore an intellectual topic with a faculty member in a small seminar setting. Berkeley Seminars are offered in all campus departments, and topics vary from department to department and semester to semester. (F,SP) Basri, Filippenko, Davis

122, 161, 162, 160, C161 and three upper division electives. Courses 7A and 7B are recommended.
217. Radiative Astrophysics. (3) Three hours of lecture per week. Prerequisites: 201. The use of spectroscopy to diagnose physical conditions in optically thin objects from spectral line data. Three hours of lecture per week. (F) Blitz, Davis, Graham

C228. Extragalactic Astronomy and Cosmology. (3) Three hours of lecture per week. A survey of physical cosmological models of the origin, evolution, and fate of the universe. Topics include the Friedmann-Robertson-Walker model, thermal history and big bang nucleosynthesis, evidence and nature of dark matter and dark energy, the formation and growth of galaxies and large scale structure, the anisotropy of the cosmic microwave background, inflation in the early universe, tests of cosmological models, and current research areas. The course complements the material of Astronomy 218. Also listed as Physics C228. (F) Davis, Holzapfel, Lee, Ma, White

C249. Solar System Astrophysics. (3) Three hours of lecture per week. The physical foundations of planetary sciences. Topics include planetary interiors and surfaces, planets and moons, and smaller bodies in our solar system. The physical processes at work are described in some detail, and an evolutionary picture for our solar system, and each class of objects is discussed. Some discussion of other (potential) planetary systems is also included. Also listed as Earth and Planetary Science C249. (F) Chiang, de Pater, Marcy

250. Special Topics in Astrophysics. (3) Course may be repeated for credit. Three hours of lecture per week. Prerequisites: 201 or consent of instructor. Topic will vary from semester to semester. See department for announcements. (SP) Staff

252. Stellar Structure and Evolution. (3) Three hours of lecture per week. Prerequisites: Physics 110A-110B, 112, 137A-137B. Formerly C252 and Physics C252. Equilibrium structure, radiative transfer and convection, thermnuclear reactions and stellar energy generation; stellar models, degenerate configurations, evolutionary sequences, supernovae, neutron stars, black holes, nucleosynthesis. (F,SP) Arons, Filippenko, Marcy

C254. High Energy Astrophysics. (3) Three hours of lecture per week. Prerequisites: 201 or consent of instructor. 202 recommended. Basic physics of high energy astrophysics environment. Cosmic ray production and propagation. Applications selected from pulsars, x-ray sources, supernovae, interstellar medium, extragalactic radio sources, quasars, and big-bang cosmologies. Also listed as Physics C254. (F) Arons, Boggs, Lin, Quataert

255. Computational Methods in Theoretical Astrophysics. (3) Three hours of lecture per week. Prerequisites: 201, 202, or consent of instructor. A broad survey of state-of-the-art approaches to astrophysical self-gravity, hydrodynamics, and coupling to large scale simulation of coupled non-linear astrophysical flows. Finite-difference approaches for Lagrangian and Eulerian astrophysical hydrodynamics and coupled radiation hydrodynamics, and high accuracy numerical techniques including direct N-body, P-M, PBM and hierarchical Tree. Particle gas dynamics methods such as Smooth Particle Hydrodynamics (SPH), Adaptive SPH and unification of SPH and Tree hierarchies (TREE-SPH), Adaptive SPH and their applications in astrophysics, and finite difference hydrodynamics with Adaptive Mesh Refinement (AMR). Applications of these approaches in three broad areas: Cosmology; High Energy Astrophysics and the Interstellar Medium; Klein

267. Plasma Astrophysics. (3) Three hours of lecture per week. Prerequisites: 201 and 202 recommended. Applications of magnetohydrodynamics and plasma physics to astrophysical problems. Topics emphasized will be the physics of collisionless shock waves, both non-relativistic and relativistic, with application to supernova remnants, nebulae, and jets driven by outflows from compact objects. Turbulence, cosmic rays. Reconnection, including structure and instability of current sheets, with application to flaring behavior in the Earth’s magnetosphere, the Sun, and compact objects. Turbulence in magnetized plasmas, shock intermittency and magnetically controlled jet formation, with application to the solar wind, accretion disks, and molecular clouds. Arons

C285. Theoretical Astrophysics Seminar. (2) Two hours of lecture per week. Must be taken on a satisfactory/unsatisfactory basis. Prerequisites: Consent of instructor. Survey of research currently being performed in the Department or the University. (SP) Backer

290A. Introduction to Current Research. (1) One hour of lecture per week. Must be taken on a satisfactory/unsatisfactory basis. Prerequisites: Consent of instructor. Survey of research currently being performed in the Department or the University. (SP) Backer

290B. Introduction to Current Research. (1) One hour of lecture per week. Must be taken on a satisfactory/unsatisfactory basis. Prerequisites: Consent of instructor. Continuation of 290A. Study of a research topic with an individual staff member. (SP) Backer

C290C. Cosmology. (2) Course may be repeated for credit. Two hours of seminar per week. Must be taken on a satisfactory/unsatisfactory basis. Prerequisites: Graduate standing or consent of instructor required. Previous background in cosmology recommended. Physics C290C. (F,SP) White, Cohn

292. Seminar. (1-2) Course may be repeated for credit. Tutorial. Must be taken on a satisfactory/unsatisfactory basis. Tutorial for groups of two or three students. (F,SP) Staff

299. Advanced Study and Research. (2-12) Course may be repeated for credit. (F,SP) Staff

302. Individual Study for Doctoral Students. (1-8) Course may be repeated for credit. Must be taken on a satisfactory/unsatisfactory basis. Individual study in consultation with the major field adviser, intended to provide an opportunity for the student to prepare themselves for the various examinations required of candidates for the Ph.D. (and other doctoral degrees). May be used for unit or residence requirement for the doctoral degree. (F,SP) Staff

Professional Courses

300. Instruction Techniques in General Astronomy. (2-6) Two hours of lecture per week. Must be taken on a satisfactory/unsatisfactory basis. Prerequisites: Consent of instructor. Discussion and practice of teaching techniques as applied to astronomy. Open to graduate students who are presently teaching assistants or associates. Two units for course plus one section; three units for two discussion sections. (F,SP) Staff

301. Undergraduate Astronomy Instruction. (1-2) Course may be repeated for a maximum of 4 units. One hour of lecture and three to six hours of laboratory per week. Must be taken on a pass/no pass basis. Prerequisites: An elementary astronomy course and consent of instructor. A limited number of highly qualified undergraduate students interested in astronomy teaching at the college level. Students will participate in a seminar on educational methods and engage in tutorial or laboratory teaching under supervision of a faculty member. Staff

C162. Planetary Astrophysics. (4) Three hours of lecture per week. Prerequisites: Mathematics 53, 54; Physics 7A-7B-7C. Formerly C142. Physics of planetary systems, both solar and extra-solar. Star and planet formation, radioactive dating, small-body dynamics and interaction of radiation with matter, tides, planetary interiors, atmospheres, and magnetospheres. High-quality oral presentations will be required in addition to problem sets. Also listed as Earth and Planetary Science C162. Chiang, de Pater, Marcy

H195. Special Study for Honors Candidates. (2-4) Individual project of research or study. (F,SP) Staff

198. Directed Group Study. (1-4) Course may be repeated for credit. Enrollment is restricted; see the Introduction to Courses and Curricula section of this catalog. Must be taken on a passed/not passed basis. Topics will vary with instructor. (F,SP) Staff

199. Supervised Independent Study and Research. (1-4) Course may be repeated for credit. Enrollment is restricted; see the Introduction to Courses and Curricula section of this catalog. Independent study. Must be taken on a passed/not passed basis. (F,SP) Staff

201. Radiation Processes in Astronomy. (4) Three hours of lecture per week. Prerequisites: Physics 105, 110A, 110B concurrently; open to advanced undergraduates with GPA of 3.70. Formerly 201A. An introduction to the basic physics of astronomy and astrophysics at the graduate level. Principles of energy transfer by radiation. Elements of classical and quantum theories of radiation, emittance, bremsstrahlung, cyclotron and synchrotron radiation. Compton scattering, atomic, molecular and nuclear electromagnetic transitions. Collisional excitation of atoms, molecules and nuclei. (F, Arons, Backer, Chiang, Quataert


204. Numerical Techniques in Astronomy. (3) Three hours of seminar per week. Prerequisites: Mathematics 54, 55A, 58. Formerly 204. The design, application, for two distinct numerical analysis, model fitting, and data display, all oriented towards the detailed analysis of astronomical observation data and/or numerical results from simulations. Specific topics include probability density functions, error propagation, maximum likelihood, least squares, data and function fitting, Fourier transforms, wavelets, principal components analysis, color images. The software language used is the Interactive Data Language (IDL), (SP) Heiles

216. Interstellar Matter. (3) Three hours of lecture per week. A survey of the observational data and theoretical ideas on the interstellar medium, with emphasis on the inferred physical conditions. (F, Staff

B prefix=language course for business majors R prefix=course satisfies R&Q requirement H prefix=honor course AC suffix=course satisfies American Cultures requirement GF suffix=course satisfies General Education requirement *Professor of the Graduate School **Recipient of Distinguished Teaching Award
Bioengineering (College of Engineering)

Department Office: 459 Evans Hall, (510) 642-5833
bioeng.berkeley.edu
Chair: Dorian Liepmann, Ph.D.

University Professor
Richard M. Karp (The Class of 1939 Professor Emeritus), Ph.D. Harvard University. Analysis of algorithms

Professors
†Stanley A. Berger, Ph.D. Brown University. Fluid mechanics
Thomas F. Budinger, M.D., Ph.D. University of California, Berkeley. Biomedical imaging
James Casey, Ph.D. University of California, Berkeley. Continuum mechanics
Teresa Head-Gordon, Ph.D. Carnegie-Melon University. Theoretical chemistry, computational biology
Kevin E. Healy, Ph.D. University of Pennsylvania. Biomedical, and tissue engineering
Jay Keastling, Ph.D. University of Michigan. Synthetic biology
Tony M. Keaveny, Ph.D. Cornell University. Tissue engineering and biomechanics
Luke Lee, Ph.D. University of California, Berkeley. Biomicroelectromechanical systems (BioMEMS), nanotechnology
Dorian Liepmann (Chair of the Department), Ph.D. University of California, San Diego. Fluid dynamics, Bio-MEMS
Sharmila Majumdar (in residence), Ph.D. Yale University. Quantitative magnetic imaging
Sarah J. Mcdonald, Ph.D. Nat. University of Heidelberg. Biomedical imaging
Lisa A. Pruitt, Ph.D. Brown University. Tissue biomechanics, biomaterial science
David Rempel, Ph.D. National University of Singapore. Computational genomics
Kim J. Sjölander, Ph.D. University of California, Santa Cruz. Computational biology, phylogenomics

Assistant Professors
Adam Arkin, Ph.D. Massachusetts Institute of Technology. Computational biology, systems biology
Steve Canal, Ph.D. Stanford University. Medical imaging and electrical engineering
Dan A. Fletcher, Ph.D. Stanford University. Optical force and microscopy, cell mechanics, biomedical devices
Song Li, Ph.D. University of California, San Diego. Tissue engineering
Kimm Sjölander, Ph.D. University of California, Santa Cruz. Computational biology, phylogenomics

Adjunct Faculty
Mike West, Ph.D. Baylor College of Medicine. Stem cell engineering

Professor
Rajendra S. Bhatnagar (Emeritus), Ph.D. University of California, San Francisco. Tissue bioengineering/biochemistry

Associate Professors
Irina Conboy, Ph.D. Stanford University. Stem cell biology, tissue engineering
Ian Holmes, Ph.D. University of Cambridge. Computational biology/genomics
Sanjay Kumar, M.D., Ph.D. Johns Hopkins University School of Medicine. Computational biology, developmental biology
Seung-Wuk Lee, Ph.D. University of Texas, Austin. Nanotechnology, tissue engineering
Mohammad Moftak, Ph.D. University of Toronto. Biomechanics, tissue engineering

Visiting Professor
S. Shankar Sastry, Ph.D. University of California, Berkeley. Theoretical chemistry, computational biology

Overview
The field of bioengineering applies engineering principles and practices to living things, integrating biological and medical sciences with advanced technology to help people live longer and healthier lives. No other field fulfills the potential for the interdisciplinary research and education more than bioengineering. We anticipate future breakthroughs ranging from the design of drugs customized to an individual’s biology to tiny implantable drug delivery devices, to software and components that allow researchers to design bacteria like electronic circuits.

The Department of Bioengineering at UC Berkeley is supported by exceptional faculty, strong ties to other departments on campus, and close collaborations with other institutions like UCSF and Lawrence Berkeley National Lab. Our curriculum provides a solid foundation in engineering and the biological sciences, with the freedom to explore a variety of topics and specialize in advanced areas of research. This unique environment for learning and research in a rapidly growing discipline provides dedicated students with the unique education required to become a leader in the field of bioengineering. Our graduates are prepared for successful transitions to graduate school in bioengineering or related fields, medical school, or careers in any of many bioengineering-related industries.

Undergraduate Program
The Department of Bioengineering at UC Berkeley is a multidisciplinary undergraduate major intended for academically strong students who excel in the physical sciences, mathematics, and biology. It offers students an opportunity to learn how to apply the physical sciences and mathematics in an engineering approach to biological systems. The undergraduate curriculum is designed to ensure that students will be well grounded in the fundamental principles and methods of engineering, as well as in their chosen area of biological science. There are further opportunities for specialization in advanced areas of both engineering and biology, including laboratory and clinical components on the two campuses.

The undergraduate program has three bioengineering major options: Bioengineering, Pre-Med, and Bioinformatics and Computational Biology. Within these majors, programs are available in Cell and Tissue Engineering, Biomaterials, Biomechanics, Imaging, Biomedical Instrumentation, Computational Bioengineering, Computational Biophysics, Synthetic and Systems Biology, and Bioinformatics. Bioengineering graduates may enter industry, go on to medical school, and/or pursue graduate studies in bioengineering and related disciplines.

Curriculum and Degree Requirements
A minimum of 120 semester units is required for the bachelor’s degree in bioengineering, including:

- Approximately 63 units in the lower division (described below) designed to provide a strong foundation in the physical and biological sciences and mathematics, as well as an introduction to the various fields of engineering normally applied to biology and medicine.
- Upper division study that combines advanced courses in engineering, physical and biological sciences, and/or mathematics and statistics.
- At least 42 units of upper division coursework in technical subjects such as engineering, chemistry, physics, integrative biology, molecular and cell biology, mathematics, or statistics. Of these, at least 22 units must be in bioengineering.
- Students are advised to consult the approved sample programs, or Options, described in the Announcement of the College of Engineering to identify an appropriate course sequence for bioengineering specialty areas.
- Humanities/Social Studies Electives include six courses of at least 3 units each in humanities and social studies selected from an approved list of courses. Students must also fulfill the College of Engineering Reading and Composition requirement. Refer to www.coe.berkeley.edu/current_students/hssreq.pdf for details or go to 308 McLaughlin Hall for a handout.
- One course with substantial ethics component to be chosen from an approved list.

Joint Major in Bioengineering/ Materials Science and Engineering
The Department of Bioengineering offers a joint major with Materials Science and Engineering for students who have an interest in the field of biomaterials. The broad curriculum includes exposure to fundamental courses in engineering and life sciences and will allow students to understand the interface between the two major fields. Students taking this joint major will successfully compete for jobs in the field of biomaterials in academia, industry, and government.

Bioengineering Minor
The department offers a minor in bioengineering that is open to all students who are not majoring in bioengineering and who have completed the necessary prerequisites for the minor requirements. Information is available in 467 Evans Hall.

Berkeley Summer Bioengineering Research Program
The Berkeley Summer Bioengineering Research Program provides intensive hands-on laboratory research internships in bioengineering for undergraduate students. Students are selected each spring in a competitive application process to join a faculty lab and perform full-time research over a 10-week period during the summer. The program includes industry tours, workshops and a poster session. During summer 2006, each student participant received a $3,000 fellowship and the opportunity to work closely with a faculty mentor. More information is available at bioeng.berkeley.edu/bsbpr.

Graduate Study
The graduate degree (Ph.D.) in bioengineering is administered by the Joint UCSF/UCB Bioengineering Graduate Group, which operates in cooperation with the Department of Bioengineering. This program permits students to benefit from both the strong clinical and health sciences resources available on the San Francisco campus and the strong engineering and basic life sciences resources available on the Berkeley campus.

The program is interdepartmental as well as intercampus. It combines related interests and research activities of faculty from five of the joint engineering departments and from several non-engineering departments at Berkeley with those of the faculty from all four professional schools (Dentistry, Medicine, Nursing, and Pharmacy) at San Francisco.

All students in the program are simultaneously enrolled in the Graduate Divisions of both the San Francisco and Berkeley campuses and are free to take advantage of courses and research opportunities on both campuses. The program awards the Doctor of Philosophy in Bioengineering degree from both campuses.

Students with a B.A. or B.S. degree in engineering, biology, or other science are eligible for admission. Students can obtain additional information and application materials by contacting the Bioengineering Graduate Program, 407 Evans Hall, University of California, Berkeley, Berkeley, CA 94720-1762; (510) 642-9931; bioenggrad.berkeley.edu.

Course Materials Fee
The Department of Bioengineering charges a course materials fee for Bioengineering 115. The amount of the fee is listed in the online Schedule of Classes.

Lower Division Courses
10. Introduction to Biomedicine for Engineers. (4) Three hours of lecture and one hour of discussion per week. This course is intended for lower division students interested in acquiring a foundation in
This course is intended to introduce students to the variety of fields that fall under the biotechnology umbrella. In general, these fields include medical, microbial, agricultural, environmental, and genetic biotechnology. Students in this course will learn the types of biotechnology projects currently being worked on, as well as the techniques and assays used within these projects. (F, Lee)

22L. Biotechnology Laboratory. (2) Six hours of laboratory per week. Prerequisites: 22L (must be taken concurrently). This course is intended to introduce students to a variety of laboratory techniques that are used in current day biotechnology projects. During this course, students will get hands-on molecular and cellular biotechnology experience working with E. coli, Yeast, Human and Mouse Cell Lines, DNA, RNA, and proteins. This is a biotechnology course; the focus of these exercises will be on the critical understanding of biological, biochemical, or physical mechanisms, and theories of different experimental methods, techniques, and instrumentation used. Second, students leaving this class should understand how to address a biological question and design experiments in a quantitative manner. (F, Lee)

24. Aspects of Bioengineering. (1) Course may be repeated for credit. One hour of seminar per week. Prerequisites: 22L. (must be taken concurrently). This course is intended to introduce students to the variety of fields that fall under the biotechnology umbrella. In general, these fields include medical, microbial, agricultural, environmental, and genetic biotechnology. Students in this course will learn the types of biotechnology projects currently being worked on, as well as the techniques and assays used within these projects. (F, Lee)

39. Freshman and Sophomore Seminar. (2-4) Course may be repeated for credit. One hour of seminar per week per unit for fifteen weeks. One and one half hours of seminar per week for ten weeks. Two hours of seminar per week per unit for eight weeks. Three hours of seminar per week per unit for four weeks. Sections 1-2 to be graded on a passed/not passed basis. Sections 3-4 to be graded on a letter-grade basis. Prerequisites: At discretion of instructor. Sophomore seminars are offered by faculty members in departments across all the campus. Sophomore seminars offer opportunity for close, regular intellectual contact between faculty members and students in the crucial second year. The topics vary from year to year to present student a variety of approaches and methods. Enrollment limited to 15 sophomores. (F,SP)

84. Sophomore Seminar. (1,2) Course may be repeated for credit. One hour of seminar per week per unit for fifteen weeks. One and one half hours of seminar per week for ten weeks. Two hours of seminar per week per unit for eight weeks. Three hours of seminar per week per unit for four weeks. Sections 1-2 to be graded on a passed/not passed basis. Sections 3-4 to be graded on a letter-grade basis. Prerequisites: At discretion of instructor. Sophomore seminars are offered by faculty members in departments across all the campus. Sophomore seminars offer opportunity for close, regular intellectual contact between faculty members and students in the crucial second year. The topics vary from year to year to present student a variety of approaches and methods. Enrollment limited to 15 sophomores. (F,SP)

98. Supervised Independent Group Studies. (1-4) Course may be repeated for credit. Group study meet- ings. Must be taken on a passed/not passed basis. Prerequisites: Open to junior or senior students. Under organiza- tion on various topics under the sponsorship of a member of the Bioengineering faculty. (F,SP) Staff

99. Supervised Independent Study and Research. (1-4) Course may be repeated for credit. Enrollment is restricted; see the Introduction to Courses and Curricula section of this catalog. Must be taken on a passed/not passed basis. Prerequisites: Freshman or sophomore standing and consent of instructor. Supervised independent study for lower division students. (F,SP) Staff

Upper Division Courses

100. Ethics in Science and Engineering. (3) Three hours of lecture per week. The goal of this semester course is to present the issues of professional conduct and ethical principles of engineering principles can be applied to biological and medical problems on a variety of scales. It is intended for senior undergraduate students and graduate students. Also listed as Mechanical Engineering 105B. (F,SP) Mofrad

112. Molecular Cell Biomechanics. (3) Three hours of lecture and one hour of discussion per week. Prerequisites: Mathematics 54, Physics 7A, 102, or consent of instructor. This course develops and applies scaling laws and the methods of continuum and statistical mechanics to biomechanical phenomena over a range of length scales, from molecular to cellular levels. It is intended for senior undergraduate students who have been exposed to differential equations, mechanics, and certain aspects of biology. (F,SP) Mofrad

115. Cell Biology Laboratory for Engineers. (4) Two hours of lecture and six hours of laboratory per week. Prerequisites: Molecular and Cell Biology 110 or 130. This course is designed to teach the students the structure and function of musculoskeletal tissues (e.g., bone, tendon, cartilage) are altered by cells in response to loading, injury, nutrition, and other factors. A contemporary understanding of the mechanical and chemical properties includes the knowledge of tissue ultrastructure, composition of matrix, and cell function. Students will be introduced to cellular and molecular biology and biochemistry techniques. The experimental protocol is based on the analysis of the molecular and cellular processes. The students will investigate each of the types of tissues with the help of an instructor in the laboratory. (F,SP) Johnson, Li

116. Cell and Tissue Engineering. (4) Three hours of lecture and one hour of discussion per week. Prerequisites: Engineering 45 and Molecular and Cell Biology 102 or consent of instructor. Introduction to tissue en- gineering, analysis of the cellular and tissue engineering. Topics include bioreactor and mass transport, implantation, artificial tissues, cell-matrix interaction, cell migration and cell mechanics, cell proliferation, stem cells, and cell manipulation. (SP) Li

C117. Structural Aspects of Biomaterials. (3) Four hours of discussion and two hours of laboratory per week. Prerequisites: Biology 1A, Engineering 45, Bio Engi- neering 102, and Civil Engineering 130. This course covers the structure and mechanical functions of load bearing tissues and their replacements. Natural and synthetic load-bearing biomaterials for clinical applications are reviewed. Biocompatibility of biomaterials and host response to structural implants are examined. Quantitative treatment of biomechanical problems and materials are covered in order to design biomaterial replacements for structural function. Material selection for load bearing applica-
tions including reconstructive surgery, orthopedics, dentistry, and cardiology are addressed. Mechanical design for longevity involving topics of fatigue, wear, and fracture. The major focus of the lab is the failures of devices are presented. This course includes a teaching/design laboratory component that involves designing analysis of medical devices and outreach teaching in the community. Several problem-based projects are utilized throughout the semester for design analysis. In addition to technical content, this course involves rigorous technical writing assignments, oral communication skill development and teamwork. Also listed as Mechanical Engineering C117. (SP) Prutt

C118. Biological Performance of Materials. (4) Three hours of lecture and one hour of discussion per week. Prerequisites: Molecular and Cell Biology 102, 130 (recommended), and Engineering 45, 115 or equivalent. This course is intended to give students the opportunity to expand their knowledge of topics related to biomedical materials selection and design. Structure-property relationships of biomedical materials and their interaction with biological systems will be addressed. Applications of the concepts developed include blood-materials compatibility, biomimetic materials, hard and soft tissue-materials interactions, drug delivery, tissue engineering, and biotechnology. Also listed as Materials Science and Engineering C118. (F) Healy

C119. Orthopedic Biomechanics. (4) Three hours of lecture and one hour of discussion/computer workshop per week. Prerequisites: Civil Engineering 130. Formerly C176. Studies application of biomechanical concepts including statics, dynamics, optimization theory, composite beam theory, beam-on-elastic foundation theory, Hertz contact theory and materials behavior. Topics will include forces and moments acting on human joints; composition and mechanical behavior of orthopedic biomaterials; design/analysis of artificial joint, spine, and fracture fixation prostheses; musculoskeletal bone, ligament, tendon, articular, muscle; and osteoporosis and fracture-risk prediction of bone; and bone adaptation. Students will be challenged in a MATLAB-based project to integrate the course material in an attempt to gain insight into contemporary design/analysis/problems. Also listed as Mechanical Engineering C176. (SP) Keaveny

121. Introduction to Micro and Nanobiotechnology: BioMEMS. (3) Three hours of lecture per week. Prerequisites: Chemistry 3B and Physics 7B or consent of instructor. Biophysical and chemical principles of biomedical microelectromechanical systems (bioMEMS) for the measurement of biological phenomena and clinical applications. Micro- and nano-scale devices for the manipulation of cells and biomolecules. Topics include solid-state sensors and transducers, microfluidics, chemical transducers, biomedical microelectronics, microfluidics, and hybrid integration of microfabrication technology. (F,SP) Lee, Liepmann

121L. BioMEMs and BioNanotechnology Laboratory. (4) Six hours of laboratory and two hours of lecture per week. Prerequisites: Civil Engineering 130A, Electrical Engineering 143, Mechanical Engineering 106, or Chemical Engineering 150A. Hands-on project experience in applying microfabrication techniques to problems in biotechnology, tissue engineering, micro- and nanobiological tools. Experimental design and analysis of micro- and nano-scale device interfaces. Students will give poster sessions and oral presentations on their results. (F,SP) Lee

C125. Introduction to Robotics. (4) Three hours of lecture and one hour of discussion per week. Prerequisites: Electrical Engineering 120 or equivalent, and consent of instructor. An introduction to the kinematics, dynamics, and control of robot manipulators, robotic vision, sensor fusion of range data, and other intelligent control strategies that enable robots to perform tasks such as welding, inspection of fine and gross motion strategies, robot programming languages. Proximity, tactile, and force sensing. Network modeling, stability, and fidelity in teleoperation. Biological anagles and medical applications of robotics. Also listed as Electrical Engineering C125. (F,SP) Tomlin

131. Introduction to Computational Molecular and Cell Biology. (4) Three hours of lecture and one hour of discussion per week. Prerequisites: Biology 1A, Mathematics 53 and 54, and either Engineering 77, Computer Science 61A, or Computer Science 61B; or consent of instructor. Topics include computational approaches to understanding the behavior of biological systems. Various case studies in these areas are reviewed and web-based computational biology tools will be used by students. Computational biology research connections to biotechnology will be explored. (F,SP) Holmes

C141. Statistics for Bioinformatics. (4). Three hours of lecture and two hours of laboratory per week. Prerequisites: Computer Science 9C or 9E or Engineering 77 or equivalent; Math 53, 54. Study of bioinformatics problems such as DNA pattern finding, gene expression data analysis, molecular evolution models, and biomedical sequence database searching. Introduction of the necessary probability and statistics: events, (conditional) probability, random variables, estimation, testing, and linear regression. Also listed as Statistics C141. (F,SP) Holmes

Upper Division Courses

142. Programming and Algorithm Design for Computational Biology & Genomics. (5) Three hours of lecture and one hour of discussion per week. Prerequisites: Math 54 and Molecular and Cell Biology 102; Engineering 77, or Computer Science 61A, or Science 61B or consent of instructor. This course will introduce students to the software development and select principles of algorithm design with applications in computational biology and allied disciplines. The principle language used for instruction will be Matlab with a possible introduction to C. Exams and tutorials will draw from problems in computational biology. The course will require one significant project per student, preferably biologically oriented. (F,SP) Arkin

143. Computational Methods in Biology. (4) Three hours of lecture per week. Prerequisites: Math 53 and Math 54; programming experience preferred but not required. An introduction to biophysical simulation methods and algorithms, including molecular dynamics, Monte Carlo integration, and non-algorithmic computation such as neural networks. Various case studies in applying these areas in the analysis of protein folding, protein structure prediction, drug design, and molecular evolution. Core specialization: Core B (Informatics and Genomics); Core D (Computational Biology); BioE Content: Biological. (F,SP) Head-Gordon

144. Introduction to Protein Informatics. (4) Students will receive no credit for 144 after taking 244. Three hours of lecture and three hours of computer laboratory per week. Prerequisites: Molecular and Cell Biology 100 or 102. This course will introduce students to the fundamentals of molecular biology and to the field of bioinformatics, including concepts that exist to predict the function and structure of proteins. It is designed to impart both a theoretical understanding of common computational methods and practical hands-on experience with protein sequence analysis methods applied to real data. (F,SP) Sjölander

C145L. Introductory Electronic Transducers Laboratory. (3) Two hours of lecture and three hours of laboratory per week. Prerequisites: Electrical Engineering 40. Laboratory exercises exploring a variety of transducers and their characteristics, physical quantities such as temperature, force, displacement, sound, light, ionic potential; the use of circuits for low-level differential amplification and analog signal processing; and the use of microcomputers for digital sampling and display. Lectures cover principles explored in the laboratory exercises; construction, response and signal to noise of electronic transducers and actuators; and design of circuits for sensing and controlling physical quantities. Also listed as Electrical Engineering C145L. (F) Derozen

C145M. Introductory Microcomputer Interfacing Laboratory. (3) Two hours of lecture and three hours of laboratory per week. Prerequisites: Electrical Engineering 40, Computer Science 61B or a working knowledge of ANSI C programming or consent of instructor. Laboratory exercises constructing basic interfacing circuits and writing simple programs for data acquisition, storage, analysis, display, and control. Use of the IBM PC with microprogrammed digital counter/timer, parallel I/O port. Circuit components include anti-aliasing filters, A/D and D/A converters. Exercises include effects of aliasing in periodic sampling, fast Fourier transforms of basic waveforms, the use of the Hanning filter for leakage reduction, Fourier analysis of the human voice, digital sampling and control using Fourier deconvolution. Lectures cover principles explored in the lab exercises and design of microcomputer-based systems for data acquisitions, analysis and control. Also listed as Electrical Engineering C145M. (F) Derozen

C146. Topics in Computational Biology and Genomics. (4) Three hours of lecture and one hour of discussion per week. Prerequisites: Bioengineering 142, Computer Science 61A, or equivalent ability to write programs in Java, Perl, C, or C++; Molecular and Cell Biology 100, 102, or equivalent ability to write programs in a scientific programming language. Formerly C131. Introduction and discussion of topics in genomics and computational biology. Working from evolutionary concepts, the course will cover principles and applications of molecular and cellular bioinformatics. Topics include sequences and function, and phylogenetic analysis. Also listed as Molecular and Cell Biology C146 and Plant and Microbial Biology C148. (SP) Brenner, Eisen

155. Introduction to Bioastronautics. (4) Three hours of lecture and one hour of discussion per week. This course aims to bring undergraduate students into the world of space science related research including bioastronautics and high altitude human physiology. Students will gain a strong understanding of the topics in bioastronautics, an introduction to research methods, and will learn how to structure a research team. Additionally, students will develop leadership, management, teamwork, and communication skills. The topics to be covered include history of manned space flight, the space environment, Mars and lunar environments, space flight and life support systems, space suit technology, human physiological responses to space flight, countermeasures, and microgravity conditioning, and space medicine. (F,SP) Budinger

164. Optics and Microscopy. (4) Three hours of lecture and one hour of discussion per week. Prerequisites: Physics 7A-7B-7C, or 8A-8B or equivalent introductory physics course. This course teaches fundamental principles of optical components and contemporary methods of optical microscopy for cells and molecules. Students will learn how to design simple optical systems, calculate system performance, and apply imaging techniques including transmission, reflection, phase, and fluorescence microscopy to investigate biological samples. The capabilities of optical microscopy will be compared with complementary techniques such as electron microscopy, coherence tomography, and atomic force microscopy. Students will also be responsible for researching their final project outside of class and presenting a specific application of modern microscopy to biological research as part of an end-of-semester project. (F,SP) Fletcher

C165. Image Processing and Reconstruction Tomography. (4) Three hours of lecture and one hour of discussion per week. Prerequisites: Electrical Engineering 120; basic programming ability in C or FORTRAN; and Fourier transforms in two and three dimensions. Basic image processing, theorey and algorithms for image reconstruction from projections. Physics of imaging systems including magnetic, X-ray tomography, emission tomography, ultrasound, and biomagnetic imaging. Data analysis including hypothesis testing, parameter estimation by least squares, and compartmental kinetic
modelling. Field trips to medical imaging laboratories. Also listed as Electrical Engineering C145B. (SP) Conoly

190. Advanced Topics in Bioengineering. Course may be repeated for credit. One to four hours of lecture per week. Sections 1-3 to be graded on a letter-grade basis. Sections 4-6 to be graded on a pass/graded basis. Prerequisites: Consent of instructor. These courses cover current topics of research interest. The course content may vary from semester to semester. (F,SP) Staff

190A. Advanced Topics in Biomechanics and Tissue Engineering. (1-4) (F,SP)

190B. Advanced Topics in Bioinformatics and Genomics. (1-4) (F,SP)

190C. Advanced Topics in Micromachines and Robotics. (1-4) (F,SP)

190D. Advanced Topics in Computational Bioengineering. (1-4) (F,SP)

190E. Advanced Topics in Neural and Sensory Systems Bioengineering. (1-4) (F,SP)

190F. Advanced Topics in Biomedical Imaging and Signal Processing. (1-4) (F,SP)

190G. Advanced Topics in Radiological Bioengineering. (1-4) (F,SP)

190H. Advanced Topics in Biomedical Systems Engineering. (1-4) (F,SP)

191. Junior and Senior Seminar. (1-3) Course may be repeated for credit. One to three hours of seminar per week. Must be taken on a passed/not passed basis. Prerequisites: Priority given to juniors and seniors. Junior and senior seminars are small interactive courses offered by faculty members in Biogenieing. These seminars offer opportunity for close, regular intellectual contact between faculty members and students. The topics vary from semester to semester. (F,SP) Staff

H194. Honors Undergraduate Research. (3,4) Course may be repeated for a maximum of 8 units. Variable format. Prerequisites: Upper division technical GPA 3.3 or higher and consent of instructor and adviser. Supervised research. Students who have completed 3 or more upper division courses may pursue original research under the direction of one of the members of the staff. May be taken a second time for credit only. A final report or presentation is required. A maximum of 4 units of this course may be used to fulfill the research or technical elective requirement or in the Bioengineering program. (F,SP) Staff

196. Undergraduate Design Project. (4) Course may be repeated for credit once. Individual research. Prerequisites: Junior or senior status, consent of instructor and adviser. Supervised research. This course will satisfy the Senior Bioengineering Design project requirement. Students with junior or senior status may pursue research under the direction of one of the members of the staff. May be taken a second time for credit only. A final report or presentation is required. (F,SP) Staff

198. Directed Group Study for Advanced Undergraduates. (1-4) Course may be repeated for credit. Must be taken on a passed/not passed basis. Prerequisites: Upper division standing and good academic standing. (2.0 grade point average and above). Group study will address specific topics or topics in bioengineering, usually relating to new developments. (F,SP) Staff

199. Supervised Independent Study. (1-4) Course may be repeated for credit. Must be taken on a passed/not passed basis. Supervised independent study. (F,SP) Staff

Graduate Courses

200. The Graduate Group Introductory Seminar. (1) Course may be repeated for credit. One hour of seminar per week. Must be taken on a pass/graded basis. Prerequisites: Enrollment in PhD Program in Bioengineering or consent of instructor. An introduction to research in bioengineering including specific case studies and organization of this rapidly expanding and diverse field. (F) Staff

210. Cell Mechanics and the Cytoskeleton. (3) Three hours of lecture per week. Prerequisites: Undergraduate physics and biology or consent of instructor. This course will cover descriptions of the cell based on molecular details of the cytoskeleton and its interactions with the cellular microenvironment. Through lectures, discussions, and reading of the research literature, students will learn about current questions facing the field of cell mechanics and its connections with health and disease. Fundamental biology of the cytoskeleton and associated molecular motors will be discussed in the context of cell motility and mechanotransduction. Modern techniques for quantifying mechanical properties of the cell and its structural components, including optical trapping, magnetic tweezers, atomic force microscopy, and traction-force microscopy will be presented, and recent models of cell mechanics and their predictions will be discussed and debated. (F,SP) Fletcher

211. Cell and Tissue Mechanotransduction. (3) Three hours of lecture per week. Prerequisites: Undergraduate cell biology or consent of instructor. This course will cover aspects of mechanotransduction, the process through which living cells sense and respond to their mechanical environment. Students will learn how mechanical inputs are transduced to molecular, cellular, and whole-cell behavior. They will also study newly-engineered technologies for force manipulation and measurement in living cells, and synthetic strategies to control the performance of the extracellular matrix. Finally, students will learn about the role of mechanotransduction in selected human organ systems and how these mechanisms may go awry in the setting of the disease. Instruction will feature lectures, discussions, analysis of relevant research papers, assembly of a literature review and a research proposal, and an oral presentation. (F,SP) Kumar

212. Heat and Mass Transport in Biomedical Engineering. (3) Three hours of lecture per week. Prerequisites: Mechanical Engineering 106, 109. Fundamental processes of heat and mass transport in biological systems; organic molecules, cells, biological organs, whole animals. Derivation of mathematical models and discussion of experimental procedures. Applications to biomedical engineering. Also listed as Mechanical Engineering C212. (SP) Rubinsky

213. Fluid Mechanics of Biological Systems. (3) Three hours of lecture per week. Prerequisites: Mechanical Engineering 106, or equivalent, or consent of instructor. Fluid behavior of a wide variety of biological tissues. After this theoretical basis, we will explore the constitutive behavior of load-bearing tissues. A variety of mechanics topics will be introduced, including anisotropic elasticity and failure, cellular solid theory, biphasic theory, and quasi-linear viscoelasticity (QLV) theory. Building from this theoretical foundation, we will evaluate the constitutive behavior of a wide variety of biological tissues. After taking this course, students should have sufficient background to independently study the mechanical behavior of organs and their functions, e.g. blood oxygenators, kidney dialysis machines, artificial hearts/circulatory assist devices. Also listed as Mechanical Engineering C213. (F) Berger

214. Advanced Tissue Mechanics. (3) Three hours of lecture and discussion per week. Prerequisites: Mechanical Engineering C176, 185; graduate standing or consent of instructor. Knowledge of MATLAB or equivalent. The goal of this course is to provide a foundation for characterizing and understanding the mechanical behavior of load-bearing tissues. A variety of mechanics topics will be introduced, including anisotropic elasticity and failure, cellular solid theory, biphasic theory, and quasi-linear viscoelasticity (QLV) theory. Building from this theoretical foundation, we will evaluate the constitutive behavior of a wide variety of biological tissues. After taking this course, students should have sufficient background to independently study the mechanical behavior of organs and their functions, e.g. blood oxygenators, kidney dialysis machines, artificial hearts/circulatory assist devices. Also listed as Mechanical Engineering C214. (SP) Staff

215. Models of Cell Mechanics: Dynamics of the Cytoskeleton and Nucleus. (3) Three hours of lecture per week. Prerequisites: Open to bioengineering graduate students or consent of instructor. This course has recently undergone rapid development with particular attention to the dynamics of the cytoskeleton as well as its interactions with the extracellular matrix and how these changes may cause changes in cell architecture, consequently leading to functional adaptation or pathological conditions. A wide range of models exist for cytoskeletal mechanics, ranging from continuum models to atomistic models to actin filament-based models for cell mobility. Numerous experimental techniques have also been established to quantify the cytoskeletal mechanics via perturbing the cell by exerting some sort of deformation and examining the static and dynamic response of the cell. These experimental observations along with theoretical approaches to the cell have given rise to several theories for describing the mechanics of living cells, from projection-based models to elastic, viscoelastic, or poroelastic continuum, porous gel or soft glassy material, tensegrity network incorporating discrete structural elements that bear compression. (F,SP) Motfrad

C216. Macromolecular Science in Biotechnology and Medicine. (4) Three hours of lecture and one hour of discussion per week. Prerequisites: Bioengineering 115 or equivalent; open to seniors with consent of instructor. Overview of the problems associated with the design and function in biotechnology and medicine. Principles of polymer science, polymer synthesis, and structure/property-performance relationships of polymers. Particular emphasis is given to the role of polymers in biological environments. Interactions between macromolecular and biological systems for therapy and diagnosis. Specific applications will include drug delivery, gene therapy, tissue engineering, and surface engineering. Also listed as Materials Science and Engineering C216. (SP) Healy

C217. Biomimetic Engineering—Engineering from Biology. (3) Three hours of lecture/laboratory per week. Grading-Letter; Satisfactory/Unsatisfactory for CIRM humanities and law fellows. Prerequisites: Consent of instructor. This course will provide an overview of basic and applied embryonic stem cell (ESC) biology. Topics will include early embryonic development, ESC laboratory methods, biomaterials for directed differentiation and other stem cell manipulations, and clinical uses of stem cells. Also listed as Molecular and Cellular Biology C237. (SP) Conboy

221. Introduction to Micro and Nanobiotechnology: BioMEMS. (3) Three hours of lecture per week. Prerequisites: Chemistry 3B and Physics 7B or consent of instructor. Biophysical and chemical principles of micro- and nanomachined devices (BioMEMS) for the measurement of biological phenomena and clinical applications. Micro- and nano-scale devices for the manipulation of cells and biomolecules. Topics include solid and fluid transducers, electrochemical transducers, biomedical microelectronics, microfluidics, and hybrid integration of microfabrication technology. (F,SP) Lee

C223. Polymer Engineering. (3) Three hours of lecture and one hour of discussion per week. Prerequisites: Open to bioengineering or consent of instructor. This course will cover aspects of polymer engineering, including the four basic steps in the polymerization process: monomer polymerization, polymerization, polymerization, and polymerization curing. Topics will include polymer synthesis, properties, and structure-property-performance relationships. Specific applications will include drug delivery, gene therapy, tissue engineering, and surface engineering. Also listed as Materials Science and Engineering C223. (SP) Healy


sites: Civil Engineering 130, Engineering 45. A survey of the structure and mechanical properties of advanced engineering polymers. Topics include rubber elasticity, viscoelasticity, mechanical properties, yielding, deflection, and fracture mechanisms of various classes of polymers. The course will discuss degradation schemes of polymers and long-term performance issues. The current relevance and applications of bioengineering and medicine. Also listed as Mechanical Engineering C223. (F) Staff

C230. Implications and Applications of Synthetic Biology. (3) Two hours of lecture and one hour of discussion per week. Prerequisites: Consent of instructor. Explore strategies for maximizing the economic and societal benefits of synthetic biology and minimizing the risks; create "seedlings" for future research projects in synthetic biology at UC Berkeley; increase multidisciplinary collaborations at UC Berkeley on synthetic biology, and introduce students to a wide variety of SB projects and innovators as well as policy, legal, and ethical aspects. Also listed as Chemical Engineering C295L. (SP) Arkin, Keasling

231. Introduction to Computational Molecular and Cellular Biology. (4) Students will receive no credit for 231 after taking 131. Three hours of lecture and one hour of discussion per week. Prerequisites: Math 53 and 54, and either Computer Science 61A or 61B or Engineering 77. Topics include computational approaches to gene sequence analysis, gene finding, sequence alignment using dynamic programming, protein folding and structure prediction, protein-drug interactions, genetic and biochemical pathways and networks. In hands-on analysis and seminar case studies in these areas are reviewed and web-based computational biology tools will be used by students. Computational biology research connections to biotechnology will be explored. Bioengineering content: fulfills biological and statistical requirement. Bioengineering Breadth, Core B (Informatics and Genomics) and Core D (Computational Biology). (F,SP) Holmes

240. Topics in Computational Biology and Evolution. (3) Three hours of lecture per week. Prerequisites: Graduation toward a degree in computational biology and evolution, we will focus on research and (oral and written) presentation skills and on the development of critical and analytical skills. Readings for the class will be selected from the best papers in the field over the past 20 years, with a focus on review papers and papers presenting important methods. (F,SP) Sjölander

241. Probabilistic Modeling in Computational Biology. (3) Three hours of lecture per week. Prerequisites: Mathematics S3 and 54 or equivalent; Molecular and Cellular Biology C100A/102 or equivalent; programming course(s) of instruction. The course is designed to be a self-contained, advanced introduction to the techniques used in designing and implementing probabilistic models for bioinformatics, genomics, and computational biology. Content includes computational biology and sequence analysis. A high mathematical facility is assumed: this is a course for graduate students (and advanced undergraduates) who are interested in designing their own, novel probabilistic modeling approaches, rather than for the casual user of bioinformatics software. (F,SP) Holmes

243. Computational Methods in Biology. (4) Students will receive no credit for 243 after taking 143. Three hours of lecture per week. Prerequisites: Mathematics 53 and 54. Must be able to program in scientific computing language (C, C++, Fortran), Matlab, or Java. An introduction to biophysical simulation methods and algorithms, including molecular dynamics, Monte Carlo sampling, optimization, and "non-algorithmic" computation such as neural networks. Various case studies in applying these areas in the areas of protein folding, protein structure prediction, drug docking, among others. Core C290C. Bioengineering Content: Biological. (F,SP) Head-Gordon

244. Introduction to Protein Informatics. (4) Students will receive no credit for 244 after taking 144. Three hours of lecture and three hours of computer laboratory per week. Prerequisites: C290A and C100A or C101A, and C290B. This course will introduce students to the fundamentals of molecular biology and to the bioinformatics tools and databases used for the prediction of protein function, macromolecular structure and interactions. It is designed to impart both a theoretical understanding of popular computational methods and practical hands-on experience with protein sequence analysis methods applied to real data. (F,SP) Sjölander

C246. Topics in Computational Biology and Genetics. (4) Three hours of lecture, one and one-half hours of paper review, and discussion per week. Prerequisites: C242, Computer Science 61A, or equivalent ability to write programs in Java, Perl, C, or C++; Molecular and Cellular Biology 102, or equivalent; or consent of instructor. Instruction and discussion of topics in genomics and computational biology. Working from evolutionary concepts, the course will cover principles and application of molecular sequence comparison, genome sequencing and functional annotation, and phylogenetic analysis. Also listed as Plant and Microbial Biology C246 and Molecular and Cell Biology C246. (SP) Brenner, Eisen

C279. Occupational Biomechanics. (4) Three hours of lecture/fieldwork per week. Prerequisite: Consent of instructor. In-depth studies of special problems, group perhaps in bioengineering. Laboratory that accompanies. (F,SP) Rempel

290. Advanced Topics in Bioengineering. (1-3) Course may be repeated for credit. One hour of lecture per week per unit. One to three hours of lecture per week. Prerequisites: Consent of instructor. This course covers current topics of research interest in bioengineering. The course content may vary from semester to semester. (F,SP)

290A. Advanced Topics in Biomechanics and Tissue Engineering. (1-3) (F,SP)

290B. Advanced Topics in Bioinformatics and Genomics. (1-3) (F,SP)

C290C. Topics in Fluid Mechanics. (1,2) Course may be repeated for credit. One hour of seminar per week. Must be taken on a satisfactory/unsatisfactory basis. Prerequisites: Consent of instructor. This course covers current topics of research interest in bioengineering. The course content may vary from semester to semester. (F,SP)

290D. Advanced Topics in Computational Bioengineering. (1-3) (F,SP) Staff

290F. Advanced Topics in Biomedical Imaging and Signal Processing. (1-3) (F,SP) Staff

290H. Advanced Topics in Biomedical Systems Engineering. (1-3) (F,SP) Staff

298. Group Studies, Seminars, or Group Research. (1-8) Course may be repeated for credit. Variable format. Must be taken on a satisfactory/unsatisfactory basis. Advanced studies in various subjects through special seminars on topics to be selected each year. Informal group studies of special topics, group participation in comprehensive design projects, or group research on complete problems for analysis and experimentation. (F,SP) Staff

299. Individual Study or Research. (1-12) Course may be repeated for credit. Must be taken on a satisfactory/unsatisfactory basis. Prerequisites: Graduate standing. Weekly seminars and discussions of effective teaching techniques. Use of educational objectives, alternative forms of instruction, and special techniques for teaching key concepts and techniques in bioengineering. Course is intended to orient new graduate student instructors to teaching in Bioengineering department at Berkeley. (F,SP) Staff

Biology

(Biology (College of Letters and Science or College of Natural Resources))

The three interdepartmental biology courses provide an advanced, basic introduction to the biological sciences for both majors and nonmajors. The courses are taught by faculty from all three of the biology departments on campus. Although there is no department of biology at Berkeley, the name "biology" has been retained for these courses to reflect their interdepartmental character. Additional courses in the biological sciences may be found by consulting the offerings of the departments of Integrative Biology, Molecular and Cell Biology, and Plant and Microbial Biology in this catalog.

Bio 1A and 1B are each taught both semesters, and students may enroll in either (but not both) during either the fall or spring semester.

Lower Division Courses

1A. General Biology Lecture. (3) 1B may be taken before 1A. Three hours of lecture and one hour of discussion per week. Prerequisites: Chemistry 3A or 112A, and 3B or 112B (may be taken concurrently Fall or Spring only). General introduction to cell structure and function, molecular and organism genetics, animal development, form and function. Intended for biological sciences majors, but open to all qualified students. (F,SP) Staff

1AL. General Biology Laboratory. (2) Formerly part of 1A. One hour of lecture and three hours of laboratory per week. Prerequisites: 1A must be taken concurrently Fall or Spring only). General introduction to cell structure and function, molecular and organism genetics, animal development, form and function. Intended for biological sciences majors, but open to all qualified students. (F,SP) Staff

1B. General Biology. (4) Three hours of lecture, three hours of laboratory, and one hour of discussion per week. General introduction to plant development, form, and function; population genetics, ecology, and evolution. Intended for students majoring in the biological sciences, but open to all qualified students. Students must take both Biology 1A and 1B to complete the sequence. (F,SP) Staff

11. Introduction to the Science of Living Organisms. (3) Students will receive no credit for 11 after receiving credit for both Integrative Biology 15 and 30. Three hours of lecture and one hour of discussion per week. Prerequisites: For students not majoring in a biological science and for non-science majors: Principles of biological organization and function using examples from plant and animal kingdoms. Similar in scope to Biology 1 except that knowledge of physical sciences is neither required nor assumed. (F,SP) Sponsored by Integrative Biology. Staff

11L. Laboratory for Biology 11. (2) Three hours of laboratory and one hour of discussion per week. Prerequisites: Must be taken concurrently with Biology 11. Introduces students to laboratory techniques. (F,SP) Staff

11M. Microbial Biology. (SP) Staff

12. General Zoology. (4) Three hours of lecture, one hour of discussion per week. Prerequisites: Major in the biological sciences, but open to all qualified students. Students majoring in the biological sciences must complete both 1A and 1B to complete the sequence. (F,SP) Staff
Biophysics
College of Letters and Science
Graduate Group Office: 299 Life Sciences Addition, (510) 642-0279
Chair: Graham Fleming, Ph.D.
Graduate Advisers: Susan Marquesse, M.D., Ph.D.

Program Overview
The graduate program is administered by the Graduate Group in Biophysics. This campuswide, interdepartmental program provides an opportunity for interested students to receive training leading to the Ph.D. in biophysics. Students may work under the supervision of any faculty member belonging to the group.

Students interested in pursuing graduate work in biophysics typically acquire undergraduate training in one of the basic physical or biological sciences and take key courses in biology, physics, and chemistry during the first two years at Berkeley. Relevant graduate courses are listed below. Additional courses may be found under the Department of Molecular and Cell Biology. Further information is available from the Graduate Office in 299 LSA.

Upper Division Courses

H196. Honors Research in Biophysics. (4) Course may be repeated for a maximum of 12 units. Must be taken on a pass/no pass basis. Prerequisites: Upper division standing; minimum GPA 3.2; consent of instructor. Supervised independent honors research on topics specific to biophysics, followed by brief written report and presentation to year-end student research colloquium. (F,SP)

Graduate Courses

290. Biophysics Seminar. (1) Course may be repeated for credit. One hour of seminar per week. Must be taken on a satisfactory/unsatisfactory basis. Prerequisites: Upper division standing; minimum GPA 3.2; consent of instructor. Independent research conducted by graduate students.

292. Research. (3-12) Course may be repeated for credit. Research laboratory, conference. Must be taken on a satisfactory/unsatisfactory basis. Prerequisites: Consent of instructor. Individual research under the supervision of a faculty member. (F,SP)

293A-293B. Research Seminar: Faculty Evening. (1) Course may be repeated for credit. Weekly meeting of students in the Department of Biophysics. (F,SP)

293C. Research Seminar: Student Evening. (1) Course may be repeated for credit. Weekly meeting of students in the Department of Biophysics. (F,SP)

Biostatistics
College of Letters and Science and School of Public Health
Graduate Group Office: 101 Haviland Hall, (510) 642-3241
Chair: Nicholas P. Jewell, Ph.D.
Graduate Advisers: Susan Marquesse, M.D., Ph.D.

Program Overview
The graduate program offers training in the development and application of statistical methods to biological and biomedical research. The curriculum is designed to provide students with a broad range of skills and knowledge in areas of statistical methodology.

Graduate Seminars
293. Biostatistics Seminar. (1) Course may be repeated for credit. Weekly meeting of students in the Department of Biostatistics. (F,SP)

Graduate Courses

295. Biostatistics Seminar: Faculty Evening. (1) Course may be repeated for credit. Weekly meeting of students in the Department of Biostatistics. (F,SP)

295A. Biostatistics Seminar: Student Evening. (1) Course may be repeated for credit. Weekly meeting of students in the Department of Biostatistics. (F,SP)

297. Seminar in Clinical Biostatistics. (1) Course may be repeated for credit. Weekly meeting of students in the Department of Biostatistics. (F,SP)

297A. Seminar in Clinical Biostatistics: Student Evening. (1) Course may be repeated for credit. Weekly meeting of students in the Department of Biostatistics. (F,SP)

297B. Seminar in Clinical Biostatistics: Faculty Evening. (1) Course may be repeated for credit. Weekly meeting of students in the Department of Biostatistics. (F,SP)

299. Biostatistics Seminar. (1) Course may be repeated for credit. Weekly meeting of students in the Department of Biostatistics. (F,SP)

Graduate Programs and Degrees
The Biostatistics Graduate Program offers two graduate programs: M.A. and Ph.D. These programs are appropriate for students who have either a strong mathematical and statistical background or a fo-
cuses in the biomedical sciences, or degrees in the biological sciences with a focus in mathematics and statistics. (The M.A. degree can be obtained under Plan II. The Ph.D. dissertation is administered according to Plan B.)

The Group in Biostatistics, in conjunction with other departments on the Berkeley campus, offers a Ph.D. in biostatistics with a designated emphasis in computational and genomic biology. For information on this option, go to computationalbiology.berkeley.edu.

For further information, consult www.stat.berkeley.edu/biostat.

Study Preparation for Graduate Students

For the M.A., minimum entrance requirements consist of two years of college calculus, a course in linear algebra, and a one-year course in statistics or biostatistics. Those applying for the Ph.D. should possess a strong quantitative background exceeding the minimum requirements for the M.A.

Research Facilities

Graduate students in the group have direct access to a variety of specialized computers as well as the services of the campus computing facilities. Research activity of the faculty currently includes biostatistical computing, statistical issues in AIDS research, survival analysis, environmental health, epidemiology, and statistical methods in genetics and computational biology. Projects in research areas provide opportunities for both practical experience and individual research. Cooperation with other departments allows unusually broad and effective training in both theoretical and applied directions.

Courses of Instruction

A wide variety of appropriate courses from a number of departments is available to candidates for either the M.A. or the Ph.D. degree, giving both programs considerable flexibility. Such flexibility allows students in consultation with the graduate adviser to arrange an individualized program. See Public Health and Statistics for course listings.

Buddhist Studies

(College of Letters and Science)

Group Office: 104 Durant Hall, (510) 642-3480 buddhiststudies.berkeley.edu
Director: Robert Shart, Ph.D.

Professors
Robert P. Goldman, Ph.D. University of Pennsylvania. (South and Southeast Asian Studies)
Eleanor Rosch, Ph.D. Harvard University. (Psychology)
Alexander von Rogat, Ph.D. University of Hamburg. (South and Southeast Asian Studies)
Robert Shart (The D. H. Chen Distinguished Professor of Buddhist Studies), Ph.D. University of Michigan. (East Asian Languages and Cultures)
Joanna Williams, Ph.D. Harvard University. (History of Art)
Padmapnahan S. Jain (Emeritus) Ph.D. University of London. (South and Southeast Asian Studies)
Lance P. Lancaster (Emeritus). Ph.D. University of Wisconsin-East Asian Languages and Cultures)

Associate Professors
Patricia Berger, Ph.D. University of California. (History of Art)
Gregory Levine, Ph.D. Princeton University. (History of Art)
Duncan Ryker Williams, Ph.D. Harvard University. (East Asian Languages and Cultures)

Graduate Adviser: Please consult the Buddhist Studies office at (510) 642-3480.

Group in Buddhist Studies

Undergraduate Program

There is currently no undergraduate degree in Buddhist Studies. However, the Department of East Asian Languages and Cultures offers a minor in Buddhism, and the Group in Religious Studies offers an emphasis in Buddhism. Undergraduate courses in Buddhist studies can also be found in the Departments of History of Art and South and Southeast Asian Studies.

Graduate Program

The Berkeley Group in Buddhist Studies offers an M.A. in Buddhist Studies leading to a Ph.D. degree in Buddhist studies. The group, which cooperates closely with the Departments of South and Southeast Asian Studies (SSEAS) and Asian Languages and Cultures (EALC), emphasizes the study of Buddhism in its many forms within its Asian historical and cultural context.

The ability to read and analyze Buddhist texts in their original languages is an indispensable skill for research in the field. Accordingly, the study of classical Asian languages constitutes a core element of the doctoral program. The specific combination of Asian languages required for the Ph.D. will depend on each student’s area of research, but all students will be expected to gain facility in a minimum of two Asian languages, at least one of which will be Classical Chinese, Classical Japanese, Pali, Sanskrit, or Classical Tibetan.

While linguistic competence is crucial, it is not considered in and of itself. Students are expected to acquire a sophisticated appreciation of the historical, social, and cultural milieux from which the Buddhist textual legacy emerged. All students in the Ph.D. program are encouraged to broaden and deepen their understanding of Buddhist phenonema through incorporating archaeological, ethnographic, and visual materials and perspectives. Because of Berkeley’s particular strength in the area of Buddhist visual culture (three of the group’s faculty are specialists in Buddhist art), all students in the program are expected to take at least one course in art history. In addition, depending on their research interests, students are encouraged to do additional work in fields such as anthropology, critical theory, history, literature, or philosophy. The goal of our program is not only to provide students with the linguistic, methodological, and conceptual skills to produce significant new research on Buddhist phenomena, but also to have students bring their research into dialogue with ongoing issues and concerns in the humanities writ large.

The Ph.D. program in Buddhist studies is designed for students who intend to become scholars and teachers at the university level. Students wishing to enter the Ph.D. program must have a master’s degree in any field within the area of Buddhist Studies. A master’s degree in religion is deemed relevant only if it includes significant training in an Asian language relevant to their intended area of research at the time of admission.

For application procedures, financial support, and program requirements, please refer to the Buddhist Studies web site at buddhiststudies.berkeley.edu.

Lower Division Courses

24. Freshman Seminar. (1) Course may be repeated for credit as topic varies. One hour of seminar per week per unit for fifteen weeks. One and one half hours of lecture per week.

Buddhist Studies 120. Introduction to the Study of Buddhism. (4) Three hours of lecture and one hour of discussion per week. Formerly Buddhism C120. This three-hour course provides an introduction to the study of Buddhism. The course is designed for students who are new to the field, and is suitable for those who wish to pursue further study in the field. The course covers the transmission of Buddhism from India to China and Korea, and the subsequent evolution in Japan of the Tendai, Shingon, Pure Land, Nichiren, and Zen schools of Buddhism; the organization and function of Buddhist institutions (monastic and lay); the interaction between Buddhism and other modes of religious belief and practice prevalent in Japan, notably those that go under the headings of “Shinto” and “folk religion.” Also listed as Japanese C115. (F,SP) Staff

C50. Introduction to the Study of Buddhism. (4) Three hours of lecture and one hour of discussion per week. Formerly Buddhism C50. This introduction to the study of Buddhism will consider materials drawn from many forms within its Asian historical and cultural context. The course is designed for students who are new to the field, and is suitable for those who wish to pursue further study in the field. The course covers the transmission of Buddhism from India to China and Korea, and the subsequent evolution in Japan of the Tendai, Shingon, Pure Land, Nichiren, and Zen schools of Buddhism; the organization and function of Buddhist institutions (monastic and lay); the interaction between Buddhism and other modes of religious belief and practice prevalent in Japan, notably those that go under the headings of “Shinto” and “folk religion.” Also listed as Japanese C115. (F,SP) Staff

84. Sophomore Seminar. (1,2) Course may be repeated for credit as topic varies. One hour of seminar per week per unit for eight weeks. Sections 1-2 to be graded on a passed/not passed basis. Sections 3-4 to be graded on a letter-grade basis. Prerequisites: Consent of instructor. Sophomore seminars are small interactive courses offered by faculty members in departments all across the campus. Sophomore seminars offer opportunity for close, regular intellectual contact between faculty and students in the crucial second year. The topics vary from department to department and semester to semester. (F,SP) Staff

98. Directed Group Study for Lower Division Students. (1-4) Course may be repeated for credit. Enrollment is restricted; see the Introduction to Courses and Curricula section of this catalog. Hours to be arranged. Must be taken on a passed/not passed basis. Prerequisites: Lower division standing. 3.5 GPA. Small group instruction in topics not covered by regularly scheduled courses. (F,SP) Staff

99. Independent Study for Lower Division Students. (1-4) Course may be repeated for credit. Enrollment is restricted; see the Introduction to Courses and Curricula section of this catalog. Hours to be arranged. Must be taken on a passed/not passed basis. Prerequisites: Lower division standing. 3.5 GPA. Independent study in topics not covered by regularly scheduled courses. (F,SP) Staff

Upper Division Courses

C114. Tibetan Buddhism. (4) Three hours of lecture per week. Formerly Buddhism 114. This course is a broad introduction to the historical and cultural context of the Buddhism of Tibet. We will begin with the introduction of Buddhism to Tibet in the eighth century and move on to the evolution of the major schools of Tibetan Buddhism, Tibetan Buddhist literature, ritual and monastic practice, the place of Buddhism in Tibetan political history, and the contemporary situation of Tibetan Buddhism both inside and outside of Tibet. Also listed as Tibetan C114. (F,SP) Staff

C115. Japanese Buddhism. (4) Three hours of lecture per week. Formerly Buddhism 115. A critical survey of the main themes in the history of Japanese Buddhism as they are treated in modern scholarship. The course covers the transmission of Buddhism from China and Korea to Japan; the subsequent evolution in Japan of the Tendai, Shingon, Pure Land, Nichiren, and Zen schools of Buddhism; the organization and function of Buddhist institutions (monastic and lay) in Japanese society; the interaction between Buddhism and other modes of religious belief and practice prevalent in Japan, notably those that go under the headings of “Shinto” and “folk religion.” Also listed as Japanese C115. (F,SP) Staff

C120. Buddhism on the Silk Road. (4) Three hours of lecture per week. Formerly Buddhism 120. This course is both an introductory guide to the Silk Road, understood as an ever-changing series of peoples, places, and traditions, as well as an introduction to explore an intellectual topic with a faculty member and a group of peers in a small-seminar setting. These seminars are offered in all campus departments; topics vary from department to department and from semester to semester. (F,SP) Staff

C144 / Biostatistics
to the study of those same peoples, places, and traditions in the modern period. In this way, the class is intended both as a guide to the extant textual, archeological, and art historical evidence from the Silk Road, but also as a framework for thinking about what it means to study Asia and Asian religions in the context of a contemporary American classroom. All readings will be in English. Also listed as East Asian Languages and Cultures C120. (F,SP) Staff

C122. Meditation: Historical, Doctrinal, and Ethnographic Perspectives. (4) Three hours of lecture and one hour of discussion per week. This course will explore the nature and function of Buddhist meditation as it developed within various Buddhist traditions, both Indian and East Asian. It will focus on the historical evolution, doctrinal foundations, and monastic and extra-monastic regimens associated with Buddhist meditation practices. We will make use of a wide variety of primary and secondary readings as well as visual materials (including films) to attempt to place the historical and doctrinal accounts within their cultural and institutional contexts. Also listed as East Asian Languages and Cultures C124. (F,SP) Staff

C124. Buddhism and Film. (4) Two to three hours of lecture and three to four hours of discussion/film screening per week. Formerly Buddhism 124. This course will use the medium of film to explore various themes in the study of Buddhism. At the same time, we will use ideas culled from Buddhism to reflect back on the conditions of film. We will be screening a wide variety of international and domestic films, from Hollywood blockbusters to small independent films and documentaries. Themes to be considered include the role of imagination and visualization in Buddhist meditation and ritual, contesting Asian and Western notions of Buddhist authority, Orientalism, and the role of projection and fantasy in cinematic representations of Buddhism. The films will be accompanied by primary and secondary readings in Buddhism, literary, religious, and film theory. Also listed as East Asian Languages and Cultures C124. (F,SP) Staff

C126. Buddhism and the Environment. (4) Three hours of lecture per week. Prerequisites: One lower-division course in Buddhist Studies or consent of instructor. A thematic course on Buddhism perspectives on nature and Buddhist responses to environmental issues. The first half of the course focuses on East Asian Buddhist cosmological and doctrinal perspectives on the place of human nature in the environment and the relationship between the salutary goals of Buddhism and nature. The second half of the course examines Buddhist environmental activism in relation to environmental issues in contemporary Southeast Asia, East Asia, and America. Also listed as East Asian Languages and Cultures C126. (F,SP) Williams

C128. Buddhism in Contemporary Society. (4) Three hours of lecture per week. A study of the Buddhist tradition as it is found today in Asia. The course will focus on specific living traditions of East, South, and/or Southeast Asia. Themes to be addressed may include contemporary Buddhist ritual practices, future directions in the relationship between Buddhism and other religious traditions; the relationship between Buddhist institutions and the state; Buddhist monasticism and its relationship to the laity; Buddhist ethics; Buddhist “modernism,” and so on. Also listed as South and Southeast Asian Studies C145 and East Asian Languages and Cultures C128. (F,SP) Staff

C130. Zen Buddhism. (4) Three hours of lecture and one hour of discussion per week. Prerequisites: One lower-division course in Asian religion recommended. Formerly Buddhism 230. This course will introduce students to the Zen Buddhist traditions of China and Japan, drawing on a variety of disciplinary perspectives (history, anthropology, philosophy, and so on). The course will also be a range of hermeneutical dilemmas (problems involved in interpretation) entailed in understanding a sophisticated religious tradition that emerged in a time and culture very different from our own. Also listed as East Asian Languages and Cultures C130. (F,SP) Staff

C140. Readings in Chinese Buddhist Texts. (4) This course is intended for students who already have some facility in literary Chinese. Three hours of lecture and one hour of discussion per week. Prerequisites: Consent of instructor. This course is an introduction to the study of medieval Buddhist literature written in Classical Chinese. We will read samples from a variety of genres, including early Chinese translations of Sanskrit and Central Asian Buddhist scriptures, indigenous Chinese commentaries, philosophical treatises, and sectarian works, including Chan and Zen Buddhist literature. It will serve as an introduction to resource materials used in the study of Chinese Buddhist texts, and students will be expected to make use of a variety of reference tools in preparation for class. Readings in Chinese will be supplemented by a range of secondary readings in English on Mahayana doctrine and Chinese Buddhist history. Also listed as Chinese C140.

C174. Japanese Buddhism in Diaspora. (4) Three hours of lecture per week. Prerequisites: One lower-division course in Buddhist Studies or consent of instructor. This course focuses on Japanese Buddhism during the late 19th and early 20th centuries in its encounter with modernity, colonialism, and immigration history. Looking beyond the Japanese Rim to the Pacific Rim, we will begin with Japanese Buddhism’s relationship with the Meiji state, State Shinto, Christianity, and the West. Regions covered include Manchuria, Taiwan, the U.S., Japan, and Brazil. Also listed as Japanese C174. (F,SP) Williams

198. Directed Group Study. (1-4) Course may be repeated for credit. Enrollment is restricted; see the Introduction to Courses and Curricula section of this catalog. Hours to be arranged. Must be taken on a passed/not passed basis. Prerequisites: Junior or Senior standing. Special tutorial or seminar on selected topics. May be repeated for credit as topic varies. Hours to be arranged. Three hours of seminar per week.

Graduate Courses

200. Proseminar in Buddhist Studies. (1) Course may be repeated for credit as topic varies. Three hours of seminar every three to four weeks. Prerequisites: (2) monastic records, rules, and ritual manuals; (3) doctrinal treatises; (4) biographies of monks; and (5) histories of Buddhism in Japan. The seminar is designed to be of interest to a range of graduate students working on premodern Japanese culture (literature, philosophy, intellectual history, religion, art, etc.). The course will cover the field of Buddhist Studies, as well as pertinent and important works in related disciplines (anthropology, history, literature, history, philosophy, and religious studies). The content of the course will be adjusted from semester to semester to accommodate the needs and interests of the students. Also listed as Japanese C225. (F,SP) Staff

220. Seminar in Buddhism and Buddhist Texts. (2,4) Course may be repeated for credit as texts vary. Three hours of seminar per week. Prerequisites: Consent of instructor. Formerly Buddhism 225. This graduate seminar serves as an introduction to a broad range of Japanese Buddhist literature belonging to different historical periods and genres, including (1) literary texts; (2) monastic records, rules, and ritual manuals; (3) doctrinal treatises; (4) biographies of monks; and (5) histories of Buddhism in Japan. The seminar is designed to be of interest to a range of graduate students working on premodern Japanese culture (literature, philosophy, intellectual history, religion, art, etc.). Students are required to do all of the readings in the original, and the majority of students will be reading classical Japanese. The seminar will also serve as a “tools and methods” course, covering basic reference tools for the study of Japanese Buddhism as well as a secondary scholarship on premodern Japanese Buddhism. The content of the course will be adjusted from semester to semester to accommodate the needs and interests of the students. Also listed as Japanese C225. (F,SP) Staff

230. Readings in Chan and Zen Buddhist Literature. (2,4) Course may be repeated for credit as topics vary. Three hours of seminar per week. Prerequisites: One lower-division course in Buddhist Studies or consent of instructor. Formerly Buddhism 230. This course will introduce students to the study of the Chan and Zen Buddhist traditions, focusing on a range of primary sources used in the study of Chinese Buddhism. The course will focus on specific living traditions of China and Japan, drawing on a variety of disciplinary perspectives (history, anthropology, philosophy, and so on). The course will also be a range of hermeneutical dilemmas (problems involved in interpretation) entailed in understanding a sophisticated religious tradition that emerged in a time and culture very different from our own. Also listed as East Asian Languages and Cultures C230. (F,SP) Sharf

288. Directed Study for Graduate Students. (1-8) Course may be repeated for credit as topics vary. Hours to be arranged. Special tutorial or seminar on selected topics.

*Professor of the Graduate School
Recipient of Distinguished Teaching Award

B prefix=language course for business majors
C prefix=cross-listed course
H prefix=honors course
R prefix=course satisfies R&F requirement
AC suffix=course satisfies American Cultures requirement

Buddhist Studies / 145
Business Administration
(Walter A. Haas School of Business)

Office: S545 Student Services Building #1900
www.haas.berkeley.edu
Dean: Tom Campbell, Ph.D.

Associate Deans:
Richard K. Lyons, Ph.D. (Academic Affairs)
Andrew W. Shogan, Ph.D. (Instruction)

Directors:
Jennifer Chizuk, M.A. (Evening & Weekend M.B.A. Programs)
Robert Gleeson, M.A., M.B.A. (Berkeley-Columbia Executive M.B.A. Program)
Dan Himelstein, M.Sc. (Undergraduate Program)
Julia Min, M.A. (M.B.A. Program)
John O’Brien, M.S. (Master’s in Financial Engineering Program)

Philip E. Tetlock, Ph.D. (Ph.D. Program)

Professors
Jennifer Aaker (The Thomas W. Tunsher Chair in Global Business), Ph.D. Stanford University. Culture, goals, emotions, psychology of brand relationships.
Jonathan B. Berk (The Sylvia C. Coleman Chair in Finance and Accounting), Ph.D. Yale University. Theoretical and empirical issues in finance, size-related anomalies.
Severin Borenstein (The Edwin T. Grether Chair in Business Administration and Entrepreneurship), Ph.D. Massachusetts Institute of Technology. Industrial organization and government regulation, law and economics, applied microeconomics.
Tulin Cendrino (The Edwin T. Grether Chair in Business Administration and Entrepreneurship), Ph.D. University of North Carolina. Organizational theory and entrepreneurship.
Paul J. Gertler (The Li Ka Shing Foundation Chair in Health Management and Policy), Ph.D. Harvard University. Health economics.
Robert H. Edelstein, Ph.D. Harvard University. Real estate finance and institutions.
Janet L. Yellen, Ph.D. Harvard University. Theoretical and empirical issues in finance, size-related anomalies.
Benjamin E. Hermalin, Ph.D. University of Wisconsin. Corporate governance and executive compensation.
Jonathan S. Leonard, Ph.D. Harvard University. Employment, productivity, organizational behavior.
Joseph W. Garbarino, Ph.D. University of Southern California. Simulation, modeling, experimental economics.
Mark E. Rubinstein, Ph.D. University of California, Los Angeles. Options and portfolio insurance.
Oliver E. Williamson, Ph.D. University of Chicago. Business organization and strategy.
Mark J. Gubel, The Donald T. Henderson Professor in Accounting and Corporate Governance, Ph.D. Stanford University. Corporate governance.
John B. J. L. Hoggatt, Ph.D. University of New South Wales. Corporate governance.
John M. Gurye, Ph.D. University of Illinois. Human resource management, law and strategy.
Joseph A. Alhadeff, Ph.D. University of California, Berkeley. Human resource management.
Joseph A. Alhadeff, Ph.D. University of California, Berkeley. Human resource management.
Michael L. Katz (The Sarin Chair in Strategy and Leadership), Ph.D. University of Chicago. Corporate strategy, corporate politics, business strategy, strategic management, managerial compensation.
Edward N. Leeland (The Amo A. Rayner Chair in Finance and Management), Ph.D. University of Florida. Corporate finance, corporation law, financial management.
Benjamin E. Hermalin, Ph.D. University of Wisconsin. Corporate governance and executive compensation.
Michael L. Katz (The Sarin Chair in Strategy and Leadership), Ph.D. University of Chicago. Corporate strategy, corporate politics, business strategy, strategic management, managerial compensation.
Hayne E. Leeland (The Amo A. Rayner Chair in Finance and Management), Ph.D. University of Florida. Corporate finance, corporation law, financial management.
Undergraduate Program

The highly competitive, two-year Haas Undergraduate Program accepts applications from both transfer and continuing UC Berkeley applicants. The program is tailored to accommodate students with the knowledge and technical skills necessary to understand the modern business world, to prepare for subsequent graduate work, and to achieve the highest levels of success in their professional careers. Students earn a Bachelor of Science degree in their environment. Students are challenged to de- velop creative and innovative solutions to contemporary business problems and to demonstrate management and leadership skills and a sense of community service through classroom experiences and extracurricular activities.

Students preparing for admission to the Undergraduate Program may complete required lower division courses in any college in the University or equivalent courses at other institutions. Before applying to the school, you should visit our web site at www.haas.berkeley.edu/Undergrad. The web site contains complete information concerning academic qualifications for admission, with details about prerequisites and degree requirements. Because there are many more applicants than spaces available, completion of the prerequisites does not guarantee admission.

Upon admission, business majors must take the following upper division core courses at Haas:

- UGBA 100—Business Communication
- UGBA 101A—Microeconomic Analysis for Business Decisions
- UGBA 101B—Macroeconomic Analysis for Business Decisions
- UGBA 102A—Introduction to Financial Accounting
- UGBA 102B—Introduction to Managerial Accounting
- UGBA 103—Introduction to Finance
- UGBA 105—Organizational Behavior
- UGBA 106—Marketing
- UGBA 107—Social, Political, and Ethical Environment of Business

Beyond these required core courses and other curricular requirements, Haas students are encouraged to take additional courses from the following nine business disciplines: accounting, business and public policy, economic analysis and policy, finance, general management, marketing, operations and information technology management, organizational behavior and industrial relations, and real estate and urban land economics.

Contact Information: Haas School of Business, University of California, Berkeley, S450 Student Services Building #1900, Berkeley, CA 94720-1900; Telephone (510) 642-1421; www.haas.berkeley.edu/Undergrad

Graduate Degrees

The Haas School of Business offers curricula leading to the Master of Business Administration degree, Master’s in Finance, and the Ph.D. degree. The Haas School offers three M.B.A. programs: a two-year program for full-time students, the Evening & Weekend M.B.A. Program, and the Berkeley-Columbia Executive M.B.A., a 19-month program for senior professionals.

Full-Time M.B.A. Program

The Full-Time M.B.A. program at the Haas School of Business offers an unsurpassed education in the fundamentals and advanced techniques, and in-depth exposure to the trends shaping the foundations of business. It brings together outstanding men and women from around the world and teaches them to be innovative leaders.

At the end of the two-year program, students will receive the Berkeley M.B.A., embodying a spirit of challenge that will become their approach to leadership throughout their professional lives. Students learn to pursue new ideas aggressively, to defy convention, and to lead through innovation. In addition, the program is shaped by its flexible curriculum, distinguished faculty, and strong connections with business in nearby Silicon Valley and the San Francisco Bay Area.

Students are marked by a unique blend of entrepreneurial drive and team spirit, underpinned by serious scholarship and a global outlook. With approximately 33 percent international students (evenly divided between Europe, Asia, and South America) and 26 percent women, the program reflects the diverse global environment in which its graduates will pursue their careers. The diverse student body of some 480 students represents more than 200 colleges and universities, 40 countries, and a wide range of academic and professional backgrounds.

The Haas School co-sponsors four concurrent-de- gree programs:

- M.B.A./J.D. with Boalt Hall or Hastings College of the Law;
- M.B.A./M.P.H. in health services management with the School of Public Health; and
- M.B.A./M.I.A.S. in international and area studies.

In addition, two joint curriculum programs are offered:

- The Management of Technology Certificate, a joint program with the College of Engineering;
- The Real Estate Development Program with the Department of City and Regional Planning and the Center for Real Estate and Urban Economics.

Curriculum: Students in the full-time program must complete 51 semester units to graduate: 20 units of core required courses and 31 units of electives. Students who pass as summer term students may replace core courses with electives. There is also a two-year residency requirement. Haas students may apply 6 units of credit toward their degrees from courses outside the department, such as languages or law, and they are encouraged to take full advantage of the range of course offerings at Berkeley. Students may petition to take more than 6 units.

*Professor of the Graduate School
†Recipient of Distinguished Teaching Award

Affiliated Professors

*Vinoth K. Agarwala, Ph.D. (Political Science)
*Joseph V. Farrell, Ph.D. (Economics)
*Richard J. Gilbert, Ph.D. (Economics)
*Robert P. Merger, Ph.D. (Law)
*Howard A. Shulman, Ph.D. (Law)

Senior Lecturers

*Homa Bahrami, Ph.D. (University of Aston, UK)
*Organizational behavior, strategic management
*Cristina G. Banks, Ph.D. (University of Minnesota), Personnel and organizational psychology
*Jonathan T. Kehret-Ward, Ph.D. (University of Washington)
*Leadership, marketing management
*David O. Robinson, Ph.D. (Brown University)
*Business, marketing, management
*Holly Schroth, Ph.D. (University of California, Santa Barbara)
*Negotiations, procedural justice, sunk cost
*William H. Sommersen, M.A. (San Francisco State University)
*Communications
*Paul A. Tiffany, Ph.D. (University of California, Berkeley)
*Competitive strategy, business and public policy
*Peter G. Wilton, Ph.D. (Purdue University)
*Marketing

Leaders

*George S. Cluff, Ph.D. (California, Berkeley)
*Microeconomics, strategy
*Robert Danner, J.D. (University of California, Berkeley)
*Entrepreneurship
*Timothy Dayonot, M.P.A. (Harvard University)
*Public policy
*David C. Dillard, Ph.D. (Michigan State University)
*Finance
*Stephen W. Elter, M.B.A. (University of Berkeley, Berkeley)
*Nancy A. Eustice, Ph.D. (University of Berkeley, Berkeley)
*Nonprofit management, organizational culture, control systems
*Richard M. Grant, B.S. (Stanford University)
*Information technology
*Emest Gundersoll, Ph.D. (Chicago)
*Global leadership, development, cross-border organization development, global teams
*Ericka Lutz (Teacher, Special Programs), B.A. (San Francisco State University)
*Writing
*Arthur R. Menkes, M.A. (University of Chicago)
*Communications
*John R. Phillips, J.D. (Harvard University)
*Communications
*F. Victor Staien, M.B.A. (Harvard University)
*Accounting

Adjunct Professors

*Meghan R. Busse, Ph.D. (Massachusetts Institute of Technology, Economics)
*Technology, Economics
*Henry Chesbrough, Ph.D. (University of Berkeley, Berkeley), Innovation, internal and external research and development, intellectual property
*Jerome C. Engel, M.S. (Pennsylvania University)
*Entrepreneurship
*Andrew W. Isen, M.S. (University of Michigan), Technology company strategy, high-tech entrepreneurial enterprises
*Kelle McNamee, Ph.D. (University of Michigan), Socially responsible business
*Noel W. Neidt, J.D. (University of Berkeley, Entrepreneurship
*John W. Quinlan, M.S. (University of California, Los Angeles)
*Finance
*N. Terry Pearce, B.S. (Linfield College, Oregon)
*Political Economy
*Kristiana Rauche, Ph.D. (Rand Graduate School of Policy, Health management
*Mario M. Rosas, J.D. (University of California, Berkeley, Entrepreneurship and venture capital, corporate law
*Domingo Tellera, Ph.D. (Stanford University, Finance
*Sebastian Teusenniss, M.S. (Duke University, International business
*Lee O. Hetzel (Emeritus), M.B.A., J.D., C.P.A. (University of California, Berkeley, Entrepreneurship
Students outside the M.B.A. program may take courses on a space-available basis only. They should consult the Full-Time M.B.A. program office directly before attempting to register for courses.

Exchange Programs. The Haas School offers seven exchange programs with some of the finest business schools in Europe, Asia, and North America. The following schools participate: London Business School in Great Britain, L’Ecole des Hautes Etudes Commerciales (HEC) outside Paris, the Rotterdam School of Management in the Netherlands, SDA Bocconi in Milan, Iese in Barcelona, Hong Kong University of Science and Technology, and Columbia Business School in New York City. In addition, there is a Washington Campus Program in Washington, D.C., and the M.B.A. Enterprise Corps in emerging economies provide Berkeley students with opportunities to enhance their education.

Admission. Applications for the Full-Time M.B.A. program are accepted for fall entry only. Typically, the school receives 3,000-4,000 applications for about 240 positions in the entering class. The average age of entering students is 28 years and all have significant full-time business experience before entering the program. We admit candidates with substantial professional experience and considerable leadership potential who come from a wide variety of industries and backgrounds. In addition, we seek candidates who will add to the richness of the classroom experience and participate actively in the Haas community.

Applicants are strongly urged to submit completed applications as early as possible. Applications are reviewed beginning in November and are evaluated in four decision periods, or rounds.

Career Center. The Career Center guides students through their career-planning process. Job search preparation includes workshops on interviewing, résumés, networking, and industry-specific informational sessions. Workshops are presented by Career Center staff and outside experts. On-campus recruitment opportunities include formal job interviews and informal opportunities to meet company representatives.

Campus Visits. The Haas School encourages prospective students to attend information sessions at Berkeley. Organized by first-and second-year students, these presentations cover life in the program from the student perspective. Information sessions are held daily at 1:00 p.m. throughout the academic year (except during mid-March and in the exception of school holidays). The sessions last approximately one hour. During a visit, prospective students may arrange to visit classes or request a Dutch-treat lunch and school tour with current students. For more information on or to arrange for a classroom visit, call (510) 642-5610.

Applications. Candidates should apply online through the Haas School of Business web site at www.haas.berkeley.edu. The online application is typically available in mid-August. Please read the application information carefully.

Evening & Weekend M.B.A. Program

The Haas School of Business also offers the Berkeley M.B.A. in a three-year program for working professionals who are seeking to add value to their academically and professionally experienced students. They must have completed two prerequisite courses in mathematics and statistics or their equivalents before enrollment. Waiver examinations are also available. Admission criteria for the Evening & Weekend M.B.A. program are similar to those for the full-time program.

Students in the Evening & Weekend M.B.A. program must complete 42 semester units to graduate, including 16 units of required core courses and 24 units of elective courses. Evening classes are held on the Berkeley campus Monday through Thursday from 6:00 p.m. to 9:30 p.m. Students attend classes two nights per week. Weekend classes are held Saturdays from 9 a.m. to 6 p.m. and alternate between Berkeley and a South Bay campus.

Applications. The Evening & Weekend M.B.A. program accepts applications online at ewmba.haas.berkeley.edu/apply.html. If you are not able to apply online, you may download a printable application to work on at your leisure, or contact The Evening & Weekend M.B.A. Program, Haas School of Business, University of California, Berkeley, #1906, Berkeley, CA 94720-1906; telephone (510) 642-0292; web site: ewmba.haas.berkeley.edu.

Master’s in Financial Engineering Program

The Master’s in Financial Engineering (M.F.E.) degree is an advanced and scholarly course of study offered by the Haas School of Business. Students enrolled in the M.F.E. program learn to use theoretical finance, mathematics, and computer programming in pricing, hedging, trading, and portfolio management decision making.

Admission is extremely competitive, with 60 students admitted annually. The program starts and ends during the spring semester, and applications are accepted only for spring enrollment. In addition to meeting the UC Berkeley Division of Admissions requirements, applicants should have solid backgrounds in advanced mathematics and computer programming. Most students admitted to the program have major coursework experience in engineering, finance, statistics, physics, economics, and computer science.

The M.F.E. curriculum consists of 28 units of coursework taught over four terms of eight weeks each. Advanced courses cover topics in credit risk modeling, derivatives pricing, fixed income securities, bond portfolio management, equity and currency markets, corporate finance, dynamic asset management, arbitrage, hedging, futures and options and risk management strategies. An applied finance project of 1-3 units is also required for graduation. Credits and transfers from other universities and programs are not accepted.

Graduates of the M.F.E. program find positions in investment banking and related fields, insurance and reinsurance, corporate treasuries, corporate strategy, and money management. Specializations include risk management, asset/liability modeling/optimization, security structuring, derivative valuation and trading, consulting, asset management, research, option-based securities valuation, special hedging, and real-option investment analysis.

For full admission details, curriculum, and program information, please visit the Master’s in Financial Engineering Program web site at www.haas.berkeley.edu/MFE/index.html.

The Ph.D. Program

The Ph.D. program of the Haas School of Business is an advanced and scholarly course of study in the functioning of business and its interaction with the environment. It combines an in-depth examination of one or more of the traditional fields of study in business administration with an increasingly sophisticated and theoretical examination of the social sciences and in quantitative methods. Fields of specialization include accounting, business economics, corporate economics, and organizational behavior and industrial relations. Students in any primary specialization may also choose to concentrate in strategy by taking additional coursework. The program also enrolls students with interests in real estate, provided they take the required coursework in either accounting or finance. The Ph.D. program includes periods of intensive work in formal courses as well as individually developed and executed research of special topics and programs of research. It provides the opportunity for work closely with an internationally known faculty both in the classroom and in individual scholarly investigation.

The purpose of the program is to train men and women for careers in the research, study, and teaching of business administration. It is designed so that students not only become familiar with the sophisticated technical and theoretical disciplines underlying the practice of business administration, but to develop the capacity to contribute to these trends.

A distinguishing feature of Berkeley’s program is an emphasis on research. Since the end of World War II, the application to business of theory and methodology from the social sciences and quantitative methods from the applied sciences has resulted in an accelerated rate of knowledge acquisition. This change has significantly deepened the sophistication of research work and broadened the range of analytical concepts with which the student in business must become familiar. The intention of the Berkeley faculty is to train students who will take leadership roles in the future expansion and communication of this knowledge.

In the program may be separated into three general periods. The first encompasses formal coursework in basic and advanced subjects. The time devoted to these studies, typically two years, begins largely upon a student’s prior preparation. In the second period, directed study, students work closely with faculty members to prepare for research in their selected fields. In the last period, individual research, students work on their dissertations. Together, periods two and three usually require two to three years to complete.

Preparation for the Ph.D. Program. Admission to the Ph.D. program is open to students with an accredited bachelor’s degree, or higher, from any field. No preference in admission is given to any previous field of study or to applicants who have had some graduate training. Applicants should possess strong skills in writing and oral communications and have a basic understanding of differential calculus.

Ph.D. applications will be evaluated on the basis of evidence of a high level of scholarly ability in both quantitative and qualitative skills, the motivation to complete a strenuous academic program, and a clear statement of career objectives that are consistent with the Ph.D. degree.

Applications for the Ph.D. program may be obtained by writing to the Ph.D. Program Office, Haas School of Business, University of California, Berkeley; F655 Faculty Wing #1900, Berkeley, CA 94720-1900; web site: haas.berkeley.edu/Phd.

Undergraduate Business Administration

Lower Division Courses

10. Principles of Business. (3) Three hours of lecture and one hour of discussion per week. Formerly Business Administration 10. This course provides an introduction to the study of the modern business enterprise. The course is taught in five modules, the order of which may vary from semester to semester. The first examines the role and governance of business enterprise in a market economy. The second concentrates on financial issues, while the third looks at the study of the process of managing personnel organizations. The fourth examines product pricing, marketing, and distribution issues and the last concentrates on the international business environment. (F,SP)
10. Economic analysis applicable to the problems of business enterprises with emphasis on the determinism of the level of prices, outputs, and inputs; effects of governmental policies on the state of the competitive environment on business and government policies. (F,SP)

10.1B. Macroeconomic Analysis for Business Decisions. (3) Students will receive no credit for 101B after taking Economics 100B or 101B or International and Area Studies 107. A deficient grade in Economics 100A, 101A, or International and Area Studies 107 may be repeated by taking 101B. Three hours of lecture and one hour of optional discussion per week. Prerequisites: Economics 1, Mathematics 1A or 16A, Statistics 21, or equivalents. Formerly Business Administration 111. Analysis of the operation of the market system with emphasis on the factors responsible for economic instability; analysis of public and business policies which are necessary as a result of business fluctuations. (F,SP) Staff

10.2A. Introduction to Financial Accounting. (3) Two hours of lecture and two hours of discussion per week. Formerly Business Administration 120. The identification, measurement, and reporting of financial effects of events on enterprises, with a particular emphasis on business organization. Preparation and interpretation of balance sheets, income statements, and statements of cash flows. (F,SP)

10.2B. Introduction to Managerial Accounting. (3) Two hours of lecture and two hours of discussion per week. Prerequisites: 101A. Formerly Business Administration 123. The uses of accounting systems and their outputs in the process of management of an enterprise. Classification of costs and revenue on bases for various purposes, accrual and standard cost accounting; analyses of relevant costs and other data for decision making. (F,SP)

10.3. Introduction to Finance. (4) Three hours of lecture and one and one-half hours of discussion per week. Prerequisites: 101A. Formerly Business Administration 124. The flow of funds through an enterprise. Cash management, source and application of funds, term loans, types and sources of long-term capital. Capital budgeting, cost of capital, and financial structure. Introduction to capital markets. (F,SP)

10.4. Introduction to Organizational Behavior. (3) Students will receive no credit for 105 after taking Psychology 180 or Industrial Engineering and Operations Research 171. A deficient grade in Psychology 180 or Industrial Engineering and Operations Research 171 may be repeated by taking 105. Three hours of lecture per week. Formerly Business Administration 150. A general descriptive and analytical study of organizations from a process point of view. Problems of motivation, leadership, morale, social structure, groups, communications, hierarchy, and control in complex organizations are addressed. The interaction among technology, environment, and human behavior are considered. Alternate theoretical models are discussed. (F,SP)

10.5. Marketing. (3) Three hours of lecture per week. Formerly Business Administration 160. The evolution of markets and marketing; market structure; marketing cost and efficiency; public and private regulation; the development of marketing programs including decisions involving products, price, promotional distribution. (F,SP)

10.7. The Social, Political, and Ethical Environment of Business. (3) Three hours of lecture and one hour of discussion per week. Formerly Business Administration 170. Study and analysis of American business in a changing social and political environment; interaction between business and other institutions. Role of business in the development of social values, goals, and national priorities. The expanding role of the corporation in dealing with social problems and issues. (F,SP)

10.11. Economics of Regulated Industries. (3) Three hours of lecture and one hour of discussion per week. Prerequisites: 101A or equivalent. Formerly Business Administration 112. Survey of industry structures and regulations in the transportation, energy, communications, and financial sectors of the American economy. Application of economic analysis to the administrative regulation of prices, investment, service quality, and other managerial decisions. Analysis of regulatory alternatives to economic regulation, including market competition and public ownership. (F,SP)

11. Managerial Economics. (3) Three hours of lecture per week. Prerequisites: 101A-101B or equivalents. Formerly Business Administration 113. Analysis of economic and practice of decision-making in business firms, utilizing the concepts and techniques of managerial economics. The business decisions to be investigated include pricing policies, internal transfer pricing, and various choices under uncertainty. (F,SP)

11.4. Forecasting for Managerial Decisions. (3) Three hours of lecture per week. Prerequisites: 101A-101B or equivalents. Formerly Business Administration 114. Theory and analysis of the long-run and short-run forecasts of economic activity. (F,SP)

11.5. Special Topics in Economic Analysis and Policy. (1-4) Course may be repeated for credit. One to four hours of lecture per week. Prerequisites: 101A-101B or equivalents. Formerly Business Administration 119. A variety of topics in economic analysis and policy with emphasis on current problems and research. (F,SP)

11.6. International Trade. (3) Three hours of lecture per week. Prerequisites: 101A-101B, 102A-102B, 103, 105, and senior standing. Formerly Business Administration 122. The study of the nature, causes, and effects of international trade, and how these phenomena influence the political economy of trade. By integrating the findings of the latest theoretical and empirical research in international economics, this course helps students learn how to explore the current political debates in the U.S. and elsewhere regarding the benefits and costs of international trade. (F,SP) Staff

11.9. Strategic Planning. (3) Three hours of lecture per week. Prerequisites: 101A-101B, 102A-102B, 103, 105, and senior standing. Formerly Business Administration 123. Class format consists of online instruction, student presentations, and case discussion. This course will cover the study of the concepts and techniques required to design and implement business strategies for private, public, and non-profit organizations. Students work in teams with a client organization and present their strategic recommendations. (F,SP)

12.0. Intermediate Financial Accounting. (4) Three hours of lecture and two hours of discussion per week. Prerequisites: 102A. Formerly Business Administration 124. A deficient grade in Accounting 124 may be repeated by taking 121. Three hours of lecture per week. Formerly Business Administration 122. Continuation of 120A. Sources of long term capital and capital and capital and working capital and long-term financing and investment in securities, intangible assets. (F,SP)

12.0B. Advanced Financial Accounting. (4) Three hours of lecture and two hours of discussion per week. Prerequisites: 120A. Formerly Business Administration 122. Time management and financial accounting for partnerships, consolidated financial statements, adjustments of accounting data using price indexes; accounting for the financial effects of pension plans; other advanced accounting problems. (F,SP)

12.1. Federal Income Tax Accounting. (4) Three hours of lecture and two hours of discussion per week. Prerequisites: 102A. Formerly Business Administration 121. An intermediate-level course in the theory and practice of financial accounting. The measurement and reporting of the economic effect of events involving corporate income and loss, investment in securities, intangible assets. (F,SP)

12.2. Financial Information Analysis. (3) Three hours of lecture and one and one-half hours of discussion per week. Prerequisites: 120A. This course is designed to: (1) teach students formal reading and analysis of financial statements; (2) teach students to identify the relevant financial data used in a variety of decision contexts, such as equity valuation, forecasting firm-level economic variables,
distress prediction and credit analysis; 3) help students appreciate the factors that influence the outcome of the financial reporting process, such as the incentives of reporting parties, roles, and a firm’s competitive environment. (F,SP) Staff

126. Auditing. (4) Three hours of lecture and one and one-half hours of discussion per week. Prerequisites: 120A (120B recommended). Formerly Business Administration 126. Concepts and problems in the field of professional auditing, with emphasis on current issues, historical developments, and current concerns. (F,SP)

127. Special Topics in Accounting. (1-4) Course may be repeated for credit. One to four hours of lecture per week. Prerequisites: 120A-120B. Formerly Business Administration 129. A variety of topics in accounting with emphasis on current problems and research. (F,SP)

131. Corporate Finance and Financial Statement Analysis. (3) Three hours of lecture and one hour of discussion per week. Prerequisites: 103. Formerly Business Administration 134. This course will cover the principles and practice of business finance. It will focus on project evaluation, capital structure, and corporate governance, with an emphasis on debt, equity, and dividends. The incentives and conflicts facing managers and owners are also discussed. (F,SP)

132. Financial Institutions and Markets. (3) Three hours of lecture and one hour of discussion per week. Prerequisites: 101A-101B, and 103. Formerly Business Administration 132. Organization, behavior, and management of financial institutions. Markets for financial assets and the structure of yields, influence of Federal Reserve System and monetary policy on financial assets and institutions. (F,SP)

133. Investments. (3) Three hours of lecture and one hour of discussion per week. Prerequisites: 103. Formerly Business Administration 133. Sources of and demand for funds; operations of security markets, determination of investment policy, and procedures for analysis of securities. (F,SP)

136F. Behavioral Finance. (3) Three hours of lecture per week. Prerequisites: 103. This course looks at the influence of decision heuristics and biases on investor welfare, financial markets, and corporate decisions. Topics include overconfidence, attribution theory, representativeness heuristic, availability heuristic, anchoring and adjustment, prospect theory, ‘‘Winner’s Curse,’’ specialization, asymmetric information, market efficiency, limits of arbitrage, relative mis-pricing of common stocks, the tendency to trade in a highly correlated fashion, investor welfare, and market anomalies. (F,SP) Staff

137. Special Topics in Finance. (1-4) Course may be repeated for credit. One to four hours of lecture per week. Prerequisites: 102A-102B. Formerly Business Administration 137. Special Topics in Finance. (F) Special Topics include capital structure, dividend policy, investor behavior and managerial incentives, current problems in security pricing, aggregate planning, inventory and production to product management in marketing and the impact of emerging technologies on business. (F,SP)

140. Introduction to Management Science. (4) Three hours of lecture and one hour of discussion per week. Prerequisites: Computer Science 3, Economics 1, Math 1A or 16A, or equivalents. Formerly Business Administration 140. Survey of management science and its applications to business problems. Topics covered include linear and integer linear programming, project management, dynamic programming, inventory control, queuing theory, and simulation. (F,SP)

141. Production and Operations Management. (3) Three hours of lecture and one hour of discussion per week. Prerequisites: 140 or equivalent. Formerly Business Administration 142. A survey of the concepts and methodology of control of production and operations systems. Topics include inventory control, material requirements planning for multisite production systems, aggregate planning, scheduling, and production management systems. (F,SP)

143. Game Theory and Business Decisions. (3) Three hours of lecture and one hour of discussion per week. Prerequisites: Mathematics 1A or 16A, or consent of instructor. This course provides an introduction to game theory and decision analysis. Game theory is concerned with strategic interactions among players (multi-player games), and decision analysis is concerned with how individuals (single player games) make decisions. Emphasis is placed on applications. (F,SP) Staff

144. Fundamentals of e-Business. (3) Three hours of lecture/work and one hour of discussion per week. Prerequisites: Computer Science 3 or equivalent. Formerly Business Administration 144. This course is an introduction to e-business that is concerned with the importance of computers in organizations, including small groups, universities, firms, government, and society at large. Topics include history of development of computer technology, training of scientific versus business problems, information storage and retrieval, compilers, problem-oriented languages, simulation models, current developments in computer systems. (F,SP)

146. Planning and Design of E-Business Systems. (3) Three hours of lecture and one and one-half hours of discussion per week. Prerequisites: Computer Science 3 or equivalent. Formerly Business Administration 146. Study of principles and procedures of management of information systems. Integration of decision making, design, and analysis in various organizations. Topics relate to successful and efficient implementation strategies of business systems. ‘‘Real-world’’ projects encompass all phases of system development, systems design, development, prototyping, testing, documentation, and evaluation. Both technical and managerial issues will be emphasized. (F,SP)

147. Special Topics in Marketing and Information Technology. (1-4) Course may be repeated for credit. One to four hours of lecture per week. Prerequisites: Business Administration 140. Formerly Business Administration 147. Study of special topics in marketing and information technology with emphasis on current problems and research. (F,SP) Staff

149A. Information Technology Strategy. (3) Three hours of lecture and one hour of discussion per week. Prerequisites: CPE 105. Frontier of an information technology strategy. Focus on the use of IT by traditional firms and startups, rather than the details of the technology, with the goals of understanding how it enables new strategies and how existing strategies adapt to IT innovations. Covers IT technologies used throughout the organization, including mobile communications, systems for online payment, business-to-consumer and business-to-business transformation, management of IT, and supply chain management. (F,SP) Staff

151. Management of Human Resources. (3) Three hours of lecture per week. Prerequisites: 105. Formerly Business Administration 151. The designs of systems of rewards, assessment, and manpower development. The interaction of staffing with performance measurement, personnel evaluation, and career ladders within an on-going organization. Role of the staff manager. Introduction of change. Implications of behavioral research for management problems and policies. (F,SP)

152. Negotiation and Conflict Resolution. (3) Three hours of lecture per week. Prerequisites: 103. Formerly Business Administration 152. The purpose of this course is to understand the theory and processes of negotiation as practiced in a variety of settings. It is designed to be relevant to the broad spectrum of negotiation problems faced by managers and professionals. By focusing on the behavior of individuals, groups, and organizations in the context of competitive situations, the course will allow students the opportunity to develop negotiation skills experientially in useful analytical frameworks (e.g., simulations, cases). (F,SP) Staff

153. Industrial Relations. (3) Students will receive no credit for 153 after taking Economics 151. Three hours of lecture per week. Formerly Business Administration 153. An introduction to the role of workers, employers, and professional employee relations. Background and functioning of employer and employee organizations. Functioning of labor markets and wage and income security issues. Questions of public policy in labor economics and industrial relations. (F,SP)

154. Labor and the Law. (3) Three hours of lecture per week. Formerly Business Administration 155. Analysis of the issues arising out of legislative, administrative, and judicial efforts to define the rights, duties, and responsibilities of employers and labor relations. Includes programs to deal with racial, ethnic, sex, and age discrimination as well as the law of union-management relations. (F,SP)

155. Leadership. (3) Three hours of lecture per week. The purpose of this course is for students to develop understanding of the theory and practice of leadership in various organizational settings. It is designed to help students develop the skills through experiential exercises, behavioral and self-assessments, case studies, class discussions, and lectures. (F,SP) Staff

157. Special Topics in Organizational Behavior. (1-4) Course may be repeated for credit. One to four hours of lecture per week. Prerequisites: 105. Formerly Business Administration 159. A variety of topics in organizational behavior and industrial relations with emphasis on current problems and research. (F,SP)

160. Consumer Behavior. (3) Three hours of lecture per week. Prerequisites: 106. Consumer behavior is the study of how consumers process information, form attitudes and judgments, and make decisions. Its study is critical to understand how consumers think and behave, which is critical for a company wishing to develop and target customer focus. Given how different people are, it is amazing how similarly their minds work. Consumer psychology is the systematic study of how consumers perceive information, how they encode it in memory, integrate it with other concepts, retrieve it from memory, and utilize it to make decisions. It is one of the building blocks of the study of marketing and provides the student with a set of tools with which to analyze consumer behavior. (F,SP) Staff

161. Marketing Research: Tools and Techniques for Data Collection and Analysis. (3) Three hours of lecture per week. Prerequisites: 106. Formerly Business Administration 161. Marketing research objectives; qualitative research, surveys, experiments, sampling plans, data analysis. (F,SP) Staff

162. Brand Management and Strategy. (3) Three hours of lecture per week. Prerequisites: 106. Formerly Business Administration 162. This course is an introduction to product management in marketing consumer and industrial goods and services. The course will cover analysis of market information, development of product strategy, programming strategy, and implementation. (F,SP) Staff

163. Information- and Technology-Based Marketing. (3) Three hours of lecture per week. Prerequisites: 106. Formerly Business Administration 163. Formerly Business Administration 164. History and development of retail management types; geographical structure of retail trade; assortment of goods and services; store management; government regulations. (F,SP)

165. Integrated Marketing Communication. (3) Three hours of lecture per week. Prerequisites: 106. Formerly Business Administration 165. Basic concepts and functions of advertising in the economy; consumer motivation; problems in advertising and measuring its effectiveness. (F,SP)

166. Retailing. (3) Three hours of lecture per week. Prerequisites: 106. Formerly Business Administration 166. History and development of retail management types; geographical structure of retail trade; assortment of goods and services; store management; government regulations. (F,SP)

167. Special Topics in Marketing. (1-4) Course may be repeated for credit. One to four hours of lecture per week. Prerequisites: 106. Formerly Business Administration 168. A variety of topics in marketing with emphasis on current problems and research. (F,SP) Staff

170. Business Ethics for the 21st Century. (2) Two hours of lecture per week. The purpose of this class is to enhance the ability of students to analyze, critically, and appropriately respond to the wide-range
social and ethical issues that challenge managers as well as individuals in their roles as citizens, consumers, investors, and employees. Instruction is based on lectures, discussions, case analysis, supervised by topical and philosophical articles and essays. (F.S.P) Staff

C172. Business in Its Historical Environment. (3) Three hours of lecture per week. Formerly Business Administration C172. This course will examine selected aspects of the history of American business. Included will be an analysis of the evolution of the corporation, the development of modern managerial techniques, and the changing relationship of business, government, and labor. Also listed as American Studies C172. (F.S.P) Rosen

175. Legal Aspects of Management. (3) Three hours of lecture per week. Formerly Business Administration 175. An analysis of the law and the legal process, emphasizing the nature and functions of law within the U.S. federal system, followed by a discussion of the legal problems pertaining to contracts and related topics, business ethics, and the impact of the law on economic enterprise. (F.S.P)

177. Special Topics in Business and Public Policy. (1-4) Course may be repeated for credit. One to four hours of lecture per week. Prerequisites: 107. Formerly Business Administration 179. A variety of topics in business and public policy with emphasis on current problems and research. (F.S.P)

178. Introduction to International Business. (3) Two hours of lecture and one hour of discussion per week. Prerequisites: 101A-101B or equivalents. Formerly Business Administration 186. A survey involving environmental, economic, political, and social constraints on doing business abroad; effects of overseas business investments on domestic and foreign economies; foreign market analysis and operational strategy of a firm; and the costs of future problems and development potential of international operations. (F.S.P)

180. Introduction to Real Estate and Urban Land Economics. (3) Three hours of lecture per week. Prerequisites: Economics 1, Mathematics 16A or 1A, or equivalents. Formerly Business Administration 180. The nature of real property; market analysis; construction cycles; mortgage lending; equity investment; metropolitan growth; urban land use; real property valuation; public policies. (F.S.P)

181. Valuation of Real Property. (3) Three hours of lecture per week. Prerequisites: 180 or equivalent. Formerly Business Administration 181. Critical examination of appraisal concepts and methods; the role of value estimates in private land-use and real estate investment decisions and in the implementation of public policies affecting urban development. (F.S.P)

183. The Financial Management of Real Estate Resources. (3) Three hours of lecture per week. Prerequisites: 180. Formerly Business Administration 183. Real estate debt and equity financing; mortgage market structure; effects of credit on demand; equity investment; value in real estate finance and urban development. (F.S.P)

185. Legal Aspects of Real Estate. (3) Three hours of lecture per week. Prerequisites: 180. Recommended. Formerly Business Administration 178. The law affecting ownership and use of real property; transfers, title, zoning, and liens; and the regulation thereof in the public interest. (F.S.P)

187. Special Topics in Real Estate Economics and Finance. (1-4) Course may be repeated for credit as topic varies. One to four hours of lecture per week. A variety of topics in real estate economics and finance with emphasis on current problems and research. (F.S.P) Staff

192A. Management in the Public and Not-for-Profit Sectors. (3) Three hours of lecture per week. Prerequisites: 101A or equivalent. Formerly Business Administration 115. Economic basis of the public and not-for-profit sectors. Institutional arrangements as they impinge on operations in the public sectors. Emphasis on managerial approaches and tools to use in a nonprofit environment. (F.S.P)

192P. Strategic Corporate Social Responsibility and Consulting Projects. (3) Three hours of lecture per week. Discuss the field of strategic CSR through a series of case study-based projects. The course will examine best practices used by companies to engage in socially responsible business practices. It will provide students with a flavor of the complex dilemma both in terms of good and “good for society” and “well for shareholders.” It looks at CSR from a corporate perspective, and how this supports core business objectives, core competencies, and bottom-line profits. (F.S.P) Staff

195A. Entrepreneurship. (2) Two hours of lecture per week. Formerly Business Administration 195. Principles, theories, and practical aspects of entrepreneurship. Building on functional subject knowledge, explores successes and failures of entrepreneurship. Includes starting new ventures, writing business plans, acquiring other businesses, and making existing enterprises profitable. (F.S.P) Staff

195P. Perspectives on Entrepreneurship. (3) Three hours of lecture per week. This course explores and examines key issues facing entrepreneurs and their businesses. It is intended to provide a broad spectrum of topics across many business disciplines including accounting, finance, marketing, organizational behavior, production/quality, technology, etc. Students will acquire a keen understanding of both the theoretical and real-world challenges of entrepreneurial business leaders in achieving success in today's global business environment. (F.S.P) Staff

196. Special Topics in Business Administration. (1-4) One to four hours of lecture per week. Prerequisites: Upper division standing. Formerly Business Administration 196. Study in various fields of business administration. Topics will vary from year to year and will be announced at the beginning of each semester. (F.S.P)

198. Directed Study. (1-4) Course may be repeated for credit. Enrollment is restricted; see the Introduction to Courses section of this catalog. One to four hours of directed group study per week. Must be taken on a passed/not passed basis. Prerequisites: Consent of instructor. Formerly Business Administration 198. Organized group study on topics selected by upper division students under the sponsorship and director of a member of the Haas School of Business faculty. (F.S.P) Staff

199. Supervised Independent Study and Research. (1-4) Course may be repeated for credit. Enrollment is restricted; see the Introduction to Courses section of this catalog. One to four hours of directed group study per week. Must be taken on a passed/not passed basis. Prerequisites: Consent of instructor. Formerly Business Administration 199. Enrollment restrictions apply. (F.S.P) Staff

Master’s in Business Administration

Graduate Courses

200C. Leadership Communication. (1) One hour of lecture and one hour of discussion per week for five weeks. Leadership Communication is a workshop in the fundamentals of public speaking in today’s business environment. Through prepared and impromptu speaking exercises, the course will help students develop awareness and control of voice, posture, body language, eye contact, and other nonverbal communication. (F.S.P) Staff

200S. Data and Decisions. (2) Four hours of lecture and one and one-half hours of discussion per week for seven weeks. Formerly Business Administration 200S. The objective of this core course is to make students familiar with statistical analysis and management decisions. The course is designed for students who need to understand the basic concepts and techniques of management research as a foundation for more advanced study in the area. The
This course provides an introduction to the field of accounting and finance, covering topics such as the role of financial markets and financial institutions in allocating capital. The major focus will be on understanding the effects of greater ease of communication, deregulation in the bond and money markets. The functions of commercial banks, investment banks, and other financial intermediaries will be covered, and strategies that can be employed to achieve various investment goals.

232. Financial Institutions and Markets. (3) Three hours of lecture and one or two hours of discussion per week. Prerequisites: Business Administration 233. Formerly Business Administration 232. This course will analyze the role of financial markets and financial institutions in allocating capital. The major focus will be on understanding the effects of greater ease of communication, deregulation in the bond and money markets. The functions of commercial banks, investment banks, and other financial intermediaries will be covered, and strategies that can be employed to achieve various investment goals.

233. Investments. (3) Three hours of lecture and one or two hours of discussion per week. Prerequisites: Business Administration 230, Formerly Business Administration 233. This course will examine four different types of asset markets: equity markets, fixed income markets, futures markets and options markets. It will focus on the valuation of assets in these markets, the empirical evidence on asset valuation models, and strategies that can be employed to achieve various investment goals.

234. Advanced Topics in Corporate Finance. (2) May be repeated for credit. Two hours of lecture per week. Prerequisites: Business Administration 234, Formerly Business Administration 237. Normative models of financial decisions by business firms, financial regulation and the business firm, and empirical studies in business finance.

235. Advanced Topics in Financial Institutions and Markets. (3) Course may be repeated for credit. Three hours of lecture per week. Prerequisites: Business Administration 233, Formerly Business Administration 236, Formerly Business Administration 235. Normative issues in financial institutions, regulation of financial institutions, the analysis of money and capital markets, and empirical studies on financial institutions and financial markets. Topics to be covered will vary.

236A. Futures and Options Markets. (2) May be repeated for credit. Two hours of lecture per week. Prerequisites: Business Administration 236 plus one additional graduate finance course. Formerly Business Administration 238. Introduction to alternative investment strategies and styles as practiced by leading money managers. A money manager will spend approximately half of the class discussing his general investment philosophy. In the other half, students, practitioners, and instructor will explore the investment merits of one particular company. Students will be expected to use the library's resources, class handouts, and their ingenuity to address a set of questions relating to the firm’s investment value.

236C. Global Financial Services. (3) Three hours of lecture per week. Survey of the forces changing and shaping global finance and intermediation, especially the effects of greater ease of communication, deregulation in the bond and money markets. The functions of commercial banks, investment banks, and other financial intermediaries will be covered, and strategies that can be employed to achieve various investment goals.

236D. Investment Strategies and Styles. (2) May be repeated for credit. Two hours of lecture per week. Prerequisites: Business Administration 236 plus one additional graduate finance course. Formerly Business Administration 239. Introduction to alternative investment strategies and styles as practiced by leading money managers. A money manager will spend approximately half of the class discussing his general investment philosophy. The other half, students, practitioners, and instructor will explore the investment merits of one particular company. Students will be expected to use the library's resources, class handouts, and their ingenuity to address a set of questions relating to the firm’s investment value.

236E. Global Financial Services. (3) Three hours of lecture per week. Survey of the forces changing and shaping global finance and intermediation, especially the effects of greater ease of communication, deregulation in the bond and money markets. The functions of commercial banks, investment banks, and other financial intermediaries will be covered, and strategies that can be employed to achieve various investment goals.

236F. Portfolio Management. (3) Three hours of lecture per week. This course explores the broad range of portfolio management in practice. The class will examine the assets, strategies, characteristics, operations, and concerns unique to each type of portfolio. Practitioners will present descriptions of their businesses as well as methods and strategies that they employ.

238A. International Finance. (3) Three hours of lecture per week. Prerequisites: Business Administration 238. Formerly Business Administration 285. This course introduces students to the institutions and operations of the international macroeconomic environment; special attention is paid to international financial arrangements relevant to the management of multinational corporations. Topics include: foreign exchange and capital markets; the balance of payments; open economy macroeconomics; exchange rate determination; history of the international financial system; arbitrage and hedging; international aspects of financial decisions.

238B. Theory and Institutions of International Trade. (3) Three hours of lecture per week. Prerequisites: Business Administration 238. Formerly Business Administration 287. This course focuses on determinants of global trade flows, patterns of international competition, and governmental policies affecting trade. The major topics are: tariff and quota policies, non-tariff barriers to trade, international policies in declining and emerging industries, strategic trade policy, United States trade law, bilateral and multilateral approaches to trade liberalization, and current issues in international trade policy.

222. Financial Information Analysis. (3) Three hours of lecture per week. Prerequisites: Business Administration 202A or consent of instructor. Formerly Business Administration 222. Issues of accounting information, accounting and finance, and (3) marketing and strategy. (F,SP) Staff

211. Game Theory. (3) Three hours of lecture per week. A survey of the main ideas and techniques of game-theoretic analysis related to bargaining, conflict, and negotiation. Emphasizes the identification and analysis of archetypal strategic situations in bargaining, conflict, and negotiation. The course is to provide a foundation for applying game-theoretic analysis, both formally and intuitively, to negotiation and bargaining; and to assess archetypal strategic situations in complicated negotiating contexts, and to feel comfortable in the process of negotiation. (F,SP) Staff

212. Managerial Decisions in Regulated Industries. (3) Three hours of lecture per week. Prerequisites: Business Administration 201A or equivalent. Formerly Business Administration 212. Introduction to administrative regulation of pricing, including transportation, communication, and financial sectors, with emphasis on emerging competition in these industries. Potential regulatory reforms with alternatives to regulation.

214. Forecasting Methods for Business. (3) Three hours of lecture per week. Prerequisites: Business Administration 207A. Formerly Business Administration 214. Forecasting methods for business. “Forecasting” refers to the process by which information is extrapolated (time series) methods, as well as combinatorial (cross-sectional) methods. These include econometric techniques and purely ex- tensive, as long as they can be applied to all types of forecasting problems, that arise as a consequence of asymmetric information, government intervention, managerial incentives, and contracts and their application to corporate fi- nance. The course examines the theory and practice of financial management in both public and private organizations. (SP) Staff

215. Business Strategies for Emerging Markets: Management, Investment, and Opportunities. (3) Three hours of lecture per week. This course helps students to study the institutions of emerging markets that are relevant for managers, analyze opportunities presented by emerging markets, analyze the additional ethical challenges and issues of social responsibility common in emerging markets, and learn to minimize the risks in doing business in emerging markets. This course is a combination of lectures, class participation, and cases. (F,SP) Staff

216. The Ethics and Responsibility in Business. (1) Two hours of lecture per week for seven weeks. Formerly Business Administration 207A. This course provides students with the knowledge, understanding, and skill appropriate and morally appropriate behavior. The major focus will be on understanding the effects of greater ease of communication, deregulation in the bond and money markets. The functions of commercial banks, investment banks, and other financial intermediaries will be covered, and strategies that can be employed to achieve various investment goals.

209F. Fundamentals of Business. (3) Three hours of lecture per week. An introduction to business methods and principles of nonbusiness majors. The course is taught in three-week modules: (1) organizational behavior and management, (2) accounting and finance, and (3) marketing and strategy. (F,SP) Staff
236E. Mergers and Acquisitions: A Practical Primer. (2) Two hours of lecture per week. Prerequisites: 203 or consent of instructor. Survey of the day-to-day techniques used in mergers and control transactions. Topics include valuation, financing, deal structuring, tax and accounting considerations, agreements, closing documents, practices used in management of post-merger transition, hostile takeovers, and takeover defenses. Also covers distinctions in technology M&A, detecting corruption in cross border transactions, and attempts, and getting on deals through risk arbitrage. Blend of lecture, case study, and guest lectures. (F,SP) Staff

236F. Behavioral Finance. (3) Three hours of lecture per week. Prerequisites: 203. This course looks at the influence of decision heuristics and biases on investor welfare, financial markets, and corporate decisions. Topics include overconfidence, attribution theory, representation format, availability heuristic, anchoring and adjustment, prospect theory, “Winner’s Curse,” speculative bubbles, IPOs, market efficiency, limits of arbitrage, relative mis-pricing of common stocks, the tendency to trade in a highly correlated fashion, investor welfare, and market anomalies. (F,SP) Staff

237. Topics in Finance. (5-3) Course may be repeated for credit. One-half to three hours of lecture per week. Advanced study in the field of finance. Topics will vary from year to year and will be announced at the beginning of each semester. (F,SP)

240. Risk Management via Optimization and Simulation. (1) Two hours of lecture per week for eight weeks. Prerequisites: 200S, 203, and 204, or consent of instructor. Survey of the formulation, solution, and interpretation of mathematical models to assist management with risk. Emphasis on applications to diverse businesses and industries, including inventory management, product distribution, portfolio optimization, portfolio insurance, and yield management. Two types of models are covered: optimization and simulation. Associated with each model type is a piece of software: Excel’s Solver for optimization and Excel add-in Crystal Ball for simulation. (F,SP)

242. Strategic Planning of Production and Operations. (2) Two hours of lecture per week. Prerequisites: Business Administration 240 or consent of instructor. Formerly Business Administration 241. A course considers two techniques for guiding a managerial decision maker who has to make a choice now but will only know later whether the choice was good. Decision analysis helps if the outcome of the choice depends on “nature”; game models help if the outcome depends on human opponents (e.g., competitors). Foundations of the two techniques, and a variety of applications, are studied. (SP)

244A. MIS: Data Management. (3) Three hours of lecture and one and one-half hours of discussion per week. Prerequisites: Business Administration 204. Formerly Business Administration 248A. A course covers topics in business data management including file and data base systems. The problem of data management in large organizations is analyzed, and the logical data modeling process and its attributes are studied. Other topics include future developments in computer technology and acquiring and managing computer resources. A team project consists of the design and implementation of a data base using a relational database management system and a personal computer. (SP)

244B. MIS: Systems Analysis and Design. (3) Three hours of lecture per week. Prerequisites: Business Administration 204. Formerly Business Administration 248B. The goal of this course is to provide future general managers and information systems specialists with expertise in areas of utilizing information in decision making. Topics covered include the role of information in decision making, coursework on logistics and distribution systems, and economic consideration in systems development, hardware selection and review of technological advancements relevant to modern organizations. (F,SP)

244C. MIS: Managerial and Organizational Issues. (2) Two hours of lecture per week. Prerequisites: Business Administration 240 or consent of instructor. Formerly Business Administration 248C. This course covers the management and organizational issues associated with the implementation and growth in organizations of computer-based management information systems. The management perspective is maintained throughout and technical issues are introduced subordinate to this management perspective. (F,SP)

246A. Service Strategy. (3) Three hours of lecture per week. Prerequisites: 204 or Evening and Weekend Master of Business Administration 240 or consent of instructor. This course is designed to teach general management principles involved in the planning, execution, and management of service businesses. It covers both strategic and tactical aspects, including the development of a strategic service vision, building employee loyalty, developing customer loyalty and satisfaction, improving productivity and service quality, service innovation, and technology in service businesses. Blend of case studies, group projects, class discussions, and selected readings. (F,SP) Staff

247A. Topics in Manufacturing and Operations. (5-3) Course may be repeated for credit. One-half to three hours of lecture per week. Advanced study in the field of manufacturing and operations. Topics will vary from year to year and will be announced at the beginning of each semester. (F,SP)

247B. Topics in Information Technology. (5-3) Course may be repeated for credit. One-half to three hours of lecture per week. Advanced study in the field of information technology. Topics will vary from year to year and will be announced at the beginning of each semester. (F,SP)

248A. Supply Chain Management. (3) Three hours of lecture per week. Prerequisites: 204 or Evening and Weekend Master of Business Administration 240 or equivalent. Supply chain management concerns the flow of materials and information in multi-stage production and distribution networks. This course provides knowledge of organizational models and analytical decision support tools necessary to design, implement, and sustain successful supply chain strategies. Topics include demand and supply management, inventory management, supplier-buyer coordination via incentives, vendor-managed inventory, and the role of information technology in supply chain management. (F,SP) Staff

249A. Information Technology Strategy. (3) Three hours of lecture per week. This course focuses on the use of IT by traditional firms and startups, rather than the details of the technology, with the goals of understanding how IT enables new strategies and how existing strategies adapt to IT innovations. Covers IT technologies used throughout the organization, including mobile communications, systems for online payment, business-to-business transactions, customer relationship management, and supply chain management. (F,SP) Staff

251. Human Resources Management. (3) Three hours of lecture per week. Prerequisites: Business Administration 245. Formerly Business Administration 251. A study of the problems and techniques associated with managing the personnel function. Topics include the processes of recruitment, selection, placement, training, and evaluation of people. This course may be repeated for credit. The role of the staff manager with respect to the planning, design, and location of tasks and people is considered, with emphasis on the implications of this for the performance of the firm's personnel function. Topics include the processes of recruitment, selection, placement, training, and evaluation of people. This course may be repeated for credit. (F,SP) Staff

252. Negotiations and Conflict Resolution. (3) Three hours of lecture per week. Formerly Business Administration 252A. A study of the negotiations process, including negotiations among buyers and sellers, managers and subordinates, company units, companies and organizational agencies, and management and labor. Both two-party and multi-party relations are considered. Each course re-examines the discussion of case material, and simulations of real negotiations. Emphasis on the role of third parties in resolving disputes. (F)

253. Public Policy and the Management of Human Resources. (3) Three hours of lecture per week. Prerequisites: Business Administration 205 or consent of instructor. Formerly Business Administration 253. This course will analyze government regulation of personnel, including issues such as age, race and gender discrimination, affirmative action, equal pay and comparable worth, employment at will, and union relations. Discussion of case studies will focus on corporate and bureaucratic strategy and implementation in light of the rights and responsibilities of employers and employees. (F)

254. Power and Politics in Organizations. (2) Two hours of lecture per week. Prerequisites: Business Administration 205 or consent of instructor. Formerly Business Administration 257. This course addresses how organizations distribute various resources and how employees learn where these resources are concentrated and where they are scarce. Topics include communication skills, control issues, rewards and work rules, and politics within the organization. (F,SP) Staff

255. Creativity in Business. (3) Three hours of lecture per week. Prerequisites: Business Administration 205 or consent of instructor. Formerly Business Administration 258. This course examines the concept of creativity, bringing to light its nature in individuals, groups, and organizations. The course uses reading materials, cases, classroom, and home exercises to help students understand and be able to use creativity in their own working lives. (F,SP)

257. Special Topics in Organizational Behavior and Industrial Relations. (2-3) Course may be repeated for credit. Three hours of lecture per week. Prerequisites: Business Administration 240 or consent of instructor. Formerly Business Administration 259. Analysis of recent literature and developments related to such topics as organization development, environmental determinants of organization structure and decision-making behavior, management of professionals and management in temporary structures, cross-cultural studies of management organizations, and industrial relations systems and practices are examined. (F,SP)

260. Consumer Behavior. (3) Two hours of lecture per week. Prerequisites: Business Administration 206 or equivalent. Formerly Business Administration 260. An introduction to concepts and methodological frameworks of behavioral science useful for the understanding and prediction of consumer behavior and demand analysis. Emphasizes applications to the development of marketing policy planning and strategy and to various decision areas within marketing. (F,SP) Staff

261. Marketing Research: Tools and Techniques for Data Collection and Analysis. (3) Three hours of lecture per week. Prerequisites: Business Administration 200 or comparable statistical course. Formerly Business Administration 261. This course introduces the concepts and methodological frameworks of behavioral science useful for the understanding and prediction of consumer behavior and demand analysis. Emphasizes applications to the development of marketing policy planning and strategy and to various decision areas within marketing. (F,SP) Staff

262. Brand Management and Strategy. (3) Three hours of lecture per week. Prerequisites: Business Administration 202B and 206, or equivalent. Formerly Business Administration 262A. This course focuses on developing student skills in formulating and critique consumer marketing strategy including product, price, distribution and promotion policies. There is a heavy use of case analysis. Course is primarily designed for...
263. Information- and Technology-Based Marketing. (3) Three hours of lecture per week. Prerequisites: Business Administration 206 or equivalent. Formerly Business Administration 262B. Information technology has allowed firms to gather and process large quantities of information about consumers’ choices and reactions to marketing. These data, improved by new computing power, allow firms to use this information to understand, predict, and affect consumer behavior intelligently. This course addresses this shortcoming by teaching students how to use customer information to better market their firms. In addition, the course addresses how information technology affects marketing strategy. (F,SP)

264. High Technology Marketing Management. (3) Three hours of lecture per week. Prerequisites: Business Administration 206 or equivalent. Formerly Business Administration 264. High technology relates to that class of products and services which is subject to technological change at a pace significantly faster than for most goods in the economy. Under such circumstances, the marketing of such goods and services assemblage and number of salespersons varies from year to year and will be announced at the beginning of each semester. (F,SP)

265. Integrated Marketing Communications. (2) Two hours of lecture per week. Prerequisites: Business Administration 262B or equivalent. Formerly Business Administration 256. A specialized course in advertising, focusing on management and decision-making. Topics include objective-setting and planning; media selection; creative strategy and planning; evaluation, and examination of theories, models, and other research methods appropriate to these decision areas. Other topics include social/economic issues of advertising by nonprofit organizations. (SP)

266. Channels of Distribution. (2) Three hours of lecture per week. Prerequisites: Business Administration 206 or equivalent. Formerly Business Administration 266. The success of any marketing program often weighs heavily upon its co-execution by members of the channel. This course seeks to provide an understanding of how the strategic and tactical roles of the channel can be identified and managed. This is accomplished, first, through studying the organization and function of the channel, and second, through the examination of the processes of government decision-making and policy implementation and how they affect, and are affected by, business interests and institutions. (F,SP)

270. Business and Public Policy. (2) Three hours of lecture for ten weeks. Formerly Business Administration 207B. Introduction to political economy, the role of government in market behavior and the political environment relevant to the public policy process, regulation of business, corporate political activity and corporate governance. Compares United States corporate governance systems, public policies and political system to those of Western Europe and Japan. (F,SP)

271. Managing the Political Environment of Business. (2-3) Two or three hours of lecture per week. Prerequisites: Business Administration 207 or equivalent, or consent of instructor. Formerly Business Administration 271. This course examines the methods and strategies by which business enterprises and associations attempt to influence public policies, primarily in the United States, with some comparison to Western Europe and Japan. Uses combination of scholarly articles, current periodicals, and case studies to explore the processes of government decision-making and policy implementation and how they affect, and are affected by, business interests and institutions. (F,SP)

272. Corporate Environmental Strategy and Management. (3) Three hours of lecture per week. Prerequisites: Business Administration 265, or permission of instructor. This course introduces students to the critical decisions companies must make in order to manage their environmental impact. We will cover environmental management strategies, environmental laws and policies, and strategies for mitigating environmental risk. (SP)

275. Business Law: Managers and the Legal Environment. (3) Three hours of lecture per week. Formerly Business Administration 275. An overview of the fundamentals of real estate financial analysis, including the legal aspects of business relationships and corporate political activity and corporate governance. Topics covered include forms of business organization, duties of officers and directors, intellectual property, antitrust, contracts, employment agreements, and torts. (SP)

276. Media and Entertainment: Economics, Strategy, and Policy. (3) Three hours of lecture per week. Prerequisites: Business Administration 265, or permission of instructor. Formerly Business Administration 276. An overview of the fundamentals of real estate financial analysis, including the legal aspects of business relationships and corporate political activity and corporate governance. Topics covered include forms of business organization, duties of officers and directors, intellectual property, antitrust, contracts, employment agreements, and torts. (SP)

284. Seminar in Real Estate Investment Analysis. (3) Three hours of lecture per week. Prerequisites: Business Administration 280 and background in the basics of finance, micro-economics, macro-economics, statistics, and quantitative analysis. Formerly Business Administration 284. Analysis of selected problems and special topics related to real estate investment. Students will be introduced to the fundamentals of real estate financial analysis, including the legal aspects of business relationships and corporate political activity and corporate governance. (SP)

285. Real Estate Investments. (3) Three hours of lecture per week. The course covers the key financial and economic concepts in real estate investment. It begins with pro forma investment analysis. We then value development sites across the major sectors: residential, retail, office, industrial, and hotel. We also cover contractors, public and private managers, and consumers. It considers the interactions between private action and public regulation—including land use policy, taxation, and government subsidy programs. We will also analyze the links between primary and secondary mortgage markets, securitization, and liquidity. Finally, the links between legal housing and related markets such as transportation and public finance will be explored. (SP)

286. Housing and the Urban Economy. (3) Three hours of lecture per week. Three hours of laboratory per week. Formerly Business Administration 210A-210B or equivalent. Formerly Business Administration C296. This course covers the economics of urban housing and land markets from the viewpoints of investors, developers, public and private managers, and consumers. It considers the interactions between private action and public regulation—including land use policy, taxation, and government subsidy programs. We will also analyze the links between primary and secondary mortgage markets, securitization, and liquidity. Finally, the links between local housing and related markets—such as transportation and public finance—will be explored. (SP)

288. Global Marketing Strategy. (2) Three hours of lecture per week. Prerequisites: Business Administration 262B or equivalent. Formerly Business Administration 288. This course will cover a wide variety of topics relating to the management of international marketing strategy, including frameworks for developing international marketing strategy; sources and analysis of international market opportunities; and the development of marketing strategy in international markets. (SP)

290A. Introduction to Management of Technology. (3) Three hours of lecture per week. Formerly Business Administration 290E. This course gives students an overview of the main topics encompassed by manage-
agement of technology. It includes the full chain of innovative activities beginning with R&D and extending through production and marketing. Why do many existing firms fail to incorporate new technology? What are the success factors at each stage of innovation? The course introduces students to Haass and College of Engineering faculty working in the relevant areas and student projects at leading tech firms. (F,SP) Staff

290B. Biotechnology Industry Perspectives and Business Development. (2) Two hours of lecture per week. This course is designed to examine the strategic issues that confront the management of the development-stage biotech company, i.e., after its startup via an initial capital infusion, but before it might be deemed successful (e.g., by virtue of a product launch), or otherwise has achieved “first-tier” status. The intention is to study the biotech organization during the process of its growth and maturation from an early-stage existence through “adolescence” into an “adult” company. (F,SP) Staff

290C. Strategic Computing and Communications Technology. (3) Three hours of lecture per week. Prerequisites: Graduate standing in engineering, business administration expert, and technological skill. This course is intended to provide the marketing skills needed for the management of an entrepreneurial high technology venture, regardless of whether the individual is technical or managerial. We examine in depth successful marketing approaches for entrepreneurial companies as a function of markets and technologies. Emphasis is placed on the special disciplines such as public policy, law, economics, finance, marketing, engineering, and physics. (F,SP,FY) Staff

290D. Design as Strategic Management Issue. (2) Two hours of lecture per week. Prerequisites: Graduate standing. Formerly Business Administration 290K. This course is an introduction to product design, manufacturing, and corporate identity design. It will cover how these design strategies are integral to product development and influence customer satisfaction, quality issues, manufacturing procedures, and marketing tactics. (F,SP) Staff

290E. Marketing for High-Tech Entrepreneurs. (3) Three hours of lecture per week. Every successful entrepreneurial high tech venture has at its core individuals with mastery of two skill sets: marketing and management skills. This course is intended to present the marketing skills needed for the management of an entrepreneurial high technology venture, regardless of whether the individual is technical or managerial. We examine in depth successful marketing approaches for entrepreneurial companies as a function of markets and technologies. Emphasis is placed on the special disciplines such as public policy, law, economics, finance, marketing, engineering, and physics. (F,SP,FY) Staff

290F. Financial Management of Nonprofit Organizations. (1) Three hours of lecture per week. Formerly 290M. This course is intended to introduce students to the innovation process and its management. It provides an overview of technological change and links it to specific strategic challenges; examines the process and management of change and how they are managed; discusses the uneasy relationship between technology and the workforce; and examines challenges of managing innovation globally. (F,SP) Staff

290G. International Trade and Competition in High Technology. (2) Two hours of lecture per week. Prerequisites: Graduate standing. Formerly Business Administration 290C. This course looks at which is winning or losing and why in international competition in high technology. Topics include: 203: foreign direct investment; the interaction between business strategies and the economic and political variables that shape the development and diffusion of new technologies. (F,SP) Staff

290H. Management of Technology—Doing Business in China. (2) Two hours of lecture per week. This course is designed to introduce students to a strategic business in China or to work with an MNC in China, develop their critical analysis and strategic decision tools and skills needed to compete in the world’s most dynamic market. The course provides access and useful introductions (Guany) to rapid business development in China. (F,SP) Staff

290L. Managing Innovation and Change. (3) Three hours of lecture per week. Formerly Business Administration 274. This course is designed to introduce students to the innovation process and its management. It provides an overview of technological change and links it to specific strategic challenges; examines the process and management of change and how they are managed; discusses the uneasy relationship between technology and the workforce; and examines challenges of managing innovation globally. (F,SP) Staff

291A. Speaking as a Leader. (2) One hour of lecture and two hours of discussion per week. Formerly Business Administration 291A. Leaders must be capable of managing change in a time when organizations are merely demanding communication. This course will teach future leaders the elements that are essential to inspire such change. The instructor solicits students’ personal convictions, then provides a structure and method for effectively communicating these beliefs. Participants will develop confidence in both the content of their message and their ability to convey it. (F,SP) Staff

291D. Data Visualization for Discovery and Communication. (1) Eight hours of lecture for two weeks. This course exposes students to data presentation and introduces design practices necessary to communicate quantitative business information clearly, efficiently, and powerfully. This course identifies what to look for in the data and describes the types of charts and visual analysis techniques most effective for spotting what is meaningful and making sense of it. (F,SP) Staff

291T. Topics in Managerial Communications. (1-3) Course may be repeated for credit. One to three hours of lecture per week. Formerly Business Administration 291T. This course prepares students conceptually and practically to create, lead, and manage nonprofit organizations. It focuses on the strategies, governing board leadership, application of strategy and strategic planning, and strategic management of issues unique to or characteristic of the sector: performance measurement, program management, social change, management, resource development, community relations and marketing, human resource management, advocacy, and management. (F,SP) Staff

292A. Strategic Management of Nonprofit Organizations. (2.3) Two to three hours of lecture per week. This course prepares students conceptually and practically to create, lead, and manage nonprofit organizations. It focuses on the strategies, governing board leadership, application of strategy and strategic planning, and strategic management of issues unique to or characteristic of the sector: performance measurement, program management, social change, management, resource development, community relations and marketing, human resource management, advocacy, and management. (F,SP) Staff

292B. Nonprofit Boards. (1) Eight hours of lecture for two weeks. The purpose of this class is to acquaint Master of Business Administration students, many of whom will be asked to serve on nonprofit boards throughout their careers, with the nonprofit sector and the roles and responsibilities of nonprofit boards. Students will learn best practices used by companies to engage in socially responsible practices. It will provide students with a flavor of the complex dilemmas one can face in business in trying to do both “good for society” and “well for shareholders.” It looks at CSR from a corporate strategy perspective and how it supports core business objectives, core competencies, and bottom-line profits. (F,SP) Staff

292C. Strategic CSR and Consulting Projects. (3) Three hours of lecture per week. Formerly 292P. Discusses the field strategic of CSR through a series of lectures, guest speakers, and projects. It will examine best practices used by companies to engage in socially responsible practices. It will provide students with a flavor of the complex dilemmas one can face in business in trying to do both “good for society” and “well for shareholders.” It looks at CSR from a corporate strategy perspective and how it supports core business objectives, core competencies, and bottom-line profits. (F,SP) Staff

292F. Financial Management of Nonprofit Organizations. (1) Eight hours of lecture for two weeks. Formerly 292F. Discusses financial management issues facing nonprofit organizations. Students learn tools for effective budgeting and how to control, evaluate and revise plans. Use and development of internal and external financial reports are studied with an emphasis on using financial information for decision making. Tools and techniques of financial statement analysis, interpretation, and presentation are practiced. (F,SP) Staff

292N. Topics in Nonprofit and Public Management. (1-3) Course may be repeated for credit. One to three hours of lecture per week. Formerly 292M. Advanced
study in the field of nonprofit and public management. Topics will vary from year to year and will be announced at the beginning of each semester. (F,S,P) Staff

292R. Nonprofit Marketing and Fundraising. (2) Two hours of lecture per week. Thorough overview of the principles of fundraising as well as experience in all the major fundraising strategies: direct mail, online, major gifts, planned giving, capital campaigns, proposal writing, and grant writing. Course further distinguishes what is different about fundraising and marketing and looks at how fundraising is a subset of a larger marketing plan. Students learn how to brand an organization and write grants. (F,S,P) Staff

292S. Introduction to Social Entrepreneurship. (2) Two hours of lecture per week. The course will (1) introduce emerging global social enterprises through case analyses, guests, and a project, (2) introduce the emerging capital market for social enterprises and the possible trade-offs in social and financial return expectations from different capital sources, from venture firms to foundations, (3) introduce the management decisions inherent in growing social enterprises, and (4) help students become oriented in applying methods for measuring and reporting social impact and return. (F,S,P) Staff

292T. Topics in Socially Responsible Business. (5-3) Course may be repeated for credit. One-half to three hours of lecture per week. Advanced study in the field of Socially Responsible Business. Topics will vary from year to year and will be announced at the beginning of each semester. (F,S,P)

293. Individually Supervised Study for Graduate Students. Course may be repeated for credit. Prerequisites: Formerly Business Administration 293. Individually supervised study of subjects not available to the student in the regular schedule, approved by faculty adviser as appropriate for the student's major. (F,S,P)

293C. Curricular Practical Training Internship. Course may be repeated. The course will be individually supervised and must be approved by the faculty adviser. Must be taken on a satisfactory/unsatisfactory basis. This is an independent study course for international students doing internships under the Curricular Practical Training program. Requires a paper exploring how the theoretical constructs learned in MBA courses were applied during the internship. (F,S,P) Staff

294. Selected Topics for MBA Students. Course may be repeated for credit. Prerequisites: Formerly Business Administration 294. Advanced study in various fields of business administration. Topics may be repeated for a maximum of 2 units. Two hours of lecture per week. Advanced study in the field of entrepreneurship. This course is about the strategic financial management of entrepreneurial ventures. Students are organized into teams of four around new venture ideas of their own choosing. They conduct research, consult with members of the business community, perform analysis, and write a formal business plan. They then present an application to a panel consisting of the instructors and members of the investing community. (F,S,P)

295A. Entrepreneurship. (3) Three hours of lecture per week. Prerequisites: All core courses or equivalents. Formerly Business Administration 295A. This course is about how to start a new business and how to write a formal business plan. They examine in-depth the tasks which founders and early venture managers undertake the real challenges of building a venture. Students must be willing to discuss their project with others in the workshop as group deliberation of the entrepreneurial challenges is a key component of the class. (F,S,P) Staff

295E. Case Studies in Entrepreneurship. (2) Two hours of lecture per week. The course integrates the learnings from summer internships into academic experience. Classes will include an analysis of cases on the “Customer Development” process covered in this course. (F,S,P) Staff

295F. Customer and Business Development in Hi-Tech Enterprise. (2) Two hours of lecture per week. This course is about how to successfully organize sales, marketing, and business development in a startup. For the purpose of this course, a “startup” can either be a new venture, or an existing company entering a new market. Both must solve a common set of issues: Where is our market? Who are our customers? How do we build the right team? How do we scale sales? The course teaches the “Customer Development” process covered in this course. (F,S,P) Staff

295G. Investing in Entrepreneurial Opportunities: Building an Investment Screen, Methodology, and Process. (2) Two hours of lecture per week. This course is about how to determine the potential of an investment opportunity. The course covers the financial analysis and planning skills learned in the financial analysis and planning skills learned in the advanced financial management course. The course is designed to provide students with the tools and skills most critical to successfully screening, investing in, and/or leading companies that have both the potential to create a national or international impact or both. It will take two perspectives—the entrepreneur’s and the investor’s—and it will place a special focus on the venture capital process, including how they are formed and managed, assessing the public markets, mergers, and strategic alliances. (F,S,P) Staff

295H. Top-Down Law. (2) Two hours of lecture per week. This course is designed to prepare students to analyze legal problems that confront founders and CEOs of entrepreneurial ventures. The course is intended to broaden students’ perspective and knowledge about the legal system/process. In comparison to (a) identify, analyze, and deal with legal issues, (b) understand and respond to legal and policy grounds for laws and regulations, and (c) work effectively and efficiently with inside and outside legal counsel to resolve legal problems and manage legal risk. (F,S,P) Staff

295T. Special Topics in Entrepreneurship. (1-3) One to three hours of lecture per week. Pre-requisites: All core courses or equivalents. Formerly Business Administration 295T. Courses of this kind will cover issues in entrepreneurship that either appeal to a specialized interest by type of firm being started (e.g., new ventures in computer software) or in the aspect of the entrepreneurial process being considered (e.g., new venture funding). The courses typically will be designed to take advantage of the access offered by the University and the locale to knowledgeable and experienced members of the business community. (F,S,P)

296. Special Topics in Business Administration. (5-3) Course may be repeated for credit. One-half to three hours of lecture per week. Sections 7A and 10A (fall) and 7B and 10B (spring) will be offered in Autumn and Spring. Credit and grades are assigned on completion of sequence. All other sections are offered on a letter-grade basis. Prerequisites: Graduate standing. Formerly Business Administration 296. Advanced study in various fields of business administration. Topics will vary from year to year and will be announced at the beginning of each semester. (F,S,P) Staff

297A. Introduction to the Health Care System. (3) Three hours of lecture per week. This course gives a systematic overview of the U.S. health care delivery system by providing students with an understanding of its structure, financing, and special properties. Applies social science theory, disciplinary contributions, and research findings to the understanding of health care delivery. The course examines current issues such as the uninsured, health status, health services use, financing, and performance indicators; and analyzes the larger management and policy issues that drive reform efforts. (F,S,P) Staff

297B. Health Care Finance. (2) Two hours of lecture per week. Prerequisites: Master’s-level accounting and finance. This course covers the strategic financial management in the health services industry, including provider organizations (e.g., hospitals and physician groups) and insurance firms. Cases are used to apply the analytical tools to a variety of strategic decisions in the course. Topic areas include financial statement analysis, cost behavior, pricing and service decisions, planning and budgeting, management control, debt and equity financing, risk and return, capital budgeting, and project risk assessment. (F,S,P) Staff

297C. Health Care Technology Policy. (2) Two hours of lecture per week. An examination of the public policy institutions and processes influencing innovation, regulation, and payment for biotechnology, pharmaceuticals, surgical implants, and medical devices. Includes technology transfer and patent law; FDA review for safety/efficacy; Center for Medicare and Medicaid Services insurance coverage policy; coverage, payment, and benefit design by private insurers for new technologies; and cost-effectiveness analysis. Examples and case studies are drawn from all three technology sectors. (F,S,P) Staff
297E. Public Policy in the Business of Health Care. (2) Two hours of lecture per week. Prerequisites: Public Health 223A or equivalent. The purpose of this course is to identify and analyze public policy issues at the intersection of economics and public health, with a focus on conceptualizing and analyzing health care policy issues. Credit and grade to be awarded on completion of a final paper on a topic of the student's choosing. (F,SP) Staff

298A-298B. International Business Development for MBAs. (3) Three hours of lecture per week, pending for three weeks following the spring semester. Credit and grade to be awarded on completion of sequence. Prerequisites: First semester MBA core courses. This course includes the fundamentals of international business development, including the organization of cross-cultural business teams, the identification of market opportunities, the development of international business strategies, and the management of international political, cultural, and economic environments. This course is open to Haas students only. Staff

298S. Seminar in International Business. (2,3) Four to five and one-half hours of fieldwork per week for eight weeks. This course involves a series of speakers and seminar-type classes in preparation for a two-week study tour of a specific country or region. Participants observe and meet with top-level managers and officials in the field and meet with top-level management to learn about the opportunities and challenges of operating in a specific country or region. Evaluation is based on student presentations, participation, and a research paper. (F,SP) Staff

298. MBA Exchange Program. (1-15) Course may be repeated for credit. One to fifteen hours of lecture per week. Must be taken on a satisfactory/unsatisfactory basis. Prerequisites: Successful completion of all MBA core courses and academic standing. Students who participate in one of the Haas School's domestic or international exchange programs receive credit (usually 12 units) at Haas for the set of courses that they choose from the host school's course catalog. The courses that the students take at the host school are subject to review by the MBA Program office to ensure that they match course requirements at the Haas School. (F,SP) Staff

299. Strategy. (2) Four hours of lecture per week for seven weeks. Prerequisites: 201A. Course covers core topics in strategy, including selection of goals; the choice of products and services to offer; competitive positioning in product markets; decisions about scope and diversification of organizational structure, administrative systems, and other aspects of control and internal regulation. (F,SP) Staff

299B. Global Strategy and Multinational Enterprise. (2,3) Two to three hours of lecture per week. Prerequisites: All core courses. Formerly Business Administration 299F. Identifies the management challenges facing international firms. Attention to business strategies, organizational structures, and the role of government in the global environment. Special attention to the international environment facing U.S. companies. (F,SP) Staff

299C. Strategic Management and the Organization of Health Services. (3) Three hours of lecture per week. Prerequisites: Business Administration 205 Public Health 223A and 224A, or consent of instructor. Formerly Business Administration 299G. This course is in strategic management of health services organizations. It systematically addresses system-wide, organization-wide, and individual-level issues in strategy formulation, content, implementation, and performance. It considers internal and external factors that affect organizational performance. Emphasis is on the development and implementation of strategies to meet stakeholders’ demands, and total quality management approaches. This course covers a wide variety of health care organizations including providers, plans, suppliers, pharmaceuticals, and biotechs. The course builds on 205 and Public Health 223A. (F,SP)

299M. Marketing Strategy. (3) Three hours of lecture per week. Prerequisites: All core courses. Formerly Business Administration 299D. Strategic planning theory and methods with an emphasis on customer, competitor, industry, and environmental analysis and its application to strategy development and choice. (F,SP) Staff

299O. Organizing for Strategic Advantage. (3) Three hours of lecture per week. Prerequisites: All core courses. Formerly Business Administration 299E. Course examines current models of strategy, structure, process interaction, and the historical foundations. Students will apply current theory to traditional cases and to current events presented in the business press. In addition, the course will examine in detail emerging patterns of strategy, structure, and process—the beginnings of what appear to be "new" organizational forms. Finally, organizations will be drawn between U.S. and foreign patterns of adaptation. (F,SP)

299T. Strategic Planning: Perspectives and Dimensions. (3) Three hours of lecture per week. Prerequisites: All core courses. Formerly Business Administration 299F. Concepts of strategy and planning are developed. Several major types of planning models and techniques are evaluated for strategic policy choices, organizational design, and the allocation of resources. (F,SP) Staff

Professional Courses

300. Teaching Business. (5) Six hours of lecture per week for one week. Must be taken on a satisfactory/unsatisfactory basis. This course will cover the important skills and resources necessary to be an effective graduate student instructor (GSI) in the Haas School of Business. GSSIs are an integral part of instruction at Haas, supporting faculty teaching through administrative and pedagogical support. This course seeks to prepare MBA students for their first GSI positions, ensuring that they are ready for the many potential challenges they will face in the ensuing semester. Students will learn effective teaching strategies from faculty and veteran GSSIs, as well as resources available to them both through Haas and the Berkeley campus. This course is also taught to MBA students outside the School and focuses on the common pitfalls of any class—both in pedagogical style and in student interaction. (F,SP) Staff

Evening/Weekend Master’s in Business Administration

Graduate Courses

200C. Leadership Communications. (1) Four hours of lecture per week for seven weeks or three and one-half hours of lecture per week for nine weeks. Leadership communication is a workshop in the fundamentals of public speaking in today’s business environment. Through prepared and impromptu speeches, feedback on these applications of coaching, and classes, students will develop authentic and persuasive communication skills, develop critical listening skills, improve abilities to give, receive, and apply feedback, and gain confidence as public speakers. (F,SP) Staff

201A. Economics for Business Decision Making. (2) Four hours of lecture per week for seven weeks or three and one-half hours of lecture per week for nine weeks. Prerequisites: E204. Formerly Business Administration E201A. This course uses the tools and concepts of microeconomics to analyze decision problems in business. Emphasis is placed on the firm’s choice of policies in determining prices, inputs usage, and outputs. The effects of the state of the competitive environment on business policies are also examined.

201B. Macroeconomics in the Global Economy. (2) Four hours of lecture per week for seven weeks or three and one-half hours of lecture per week for nine weeks. Prerequisites: Business Administration E201A. Formerly Business Administration E201B. This course covers the macroeconomics of the modern world economy. The course builds on E201A to develop theories of fiscal policy, monetary policy, and other macro-economic policies. Both the issues and the evidence in connection with these policies will be covered. Other topics covered in the course range from the specifics of the U.S. balance of payments situation to the broader problems associated with economic growth and decay in the world.

202. Financial Reporting. (2) Four hours of lecture per week for seven weeks or three and one-half hours of lecture per week for nine weeks. Formerly Business Administration E203. This course will examine the role of the financial report as a source of information and as a policy tool. The institutional structure of U.S. and international financial markets, and the market mechanisms for trading securities. Topics include discounting, capital budgeting, financial and investment decision analysis, and diversification and portfolio theory. Course will also provide introductions to asset pricing theory for primary and derivative assets and to the principles governing corporate financial arrangements and contracting. (F,SP) Staff

204. Qualitative Analysis for Business Decisions. (2) Four hours of lecture per week for seven weeks or three and one-half hours of lecture per week for nine weeks. Prerequisites: Admission to the program. Formerly Business Administration E204A. An introduction to the application of quantitative methods to management decision problems. Topics include linear programming, probability theory, decision analysis, regression and correlation, and time series analysis.

205. Organizational Behavior. (2) Four hours of lecture per weekend for seven weeks or three and one-half hours of lecture per week for nine weeks. Prerequisites: Admission to the program. Formerly Business Administration E205. A survey of knowledge about behavior in and of organizations. Covered will be issues of individual behavior, group functioning, and the actions of organizations in their environments. Problems of work motivation, task design, leadership, communication, organizational design and innovation will be analyzed from multiple theoretical perspectives. Implications for the management of organizations will be illustrated through examples, cases, and exercises.

206. Marketing Organization and Management. (2) Four hours of lecture per weekend for seven weeks or three and one-half hours of lecture per week for nine weeks. Prerequisites: Business Administration E200. Formerly Business Administration E206. Topics include an overview of the marketing system and the marketing concept, buyer behavior, market research, segmentation and marketing decision making, marketing structures, and evaluation of marketing performance in the economy and society. (F,SP) Staff

207. Ethics and Responsibility in Business. (1) Four hours of lecture per week for seven weeks or one and one-half hours of lecture per week for nine weeks. Prerequisites: Admission to the program. Formerly Business Administration E207. A study of general ethical concepts, moral concepts, and problems in business and industry. (F,SP) Staff

*Professor of the Graduate School
Recipient of Distinguished Teaching Award

B prefix=language course for business majors
H prefix=honors course
R prefix=course satisfies R&AC requirement
AC suffix=course satisfies American Cultures requirement

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that characterize the legal, political, and social framework within which the system operates. (F,SP) Staff

211. Game Theory. (3) Three hours of lecture per week. A survey of the main ideas and techniques of game-theoretic analysis related to bargaining, conflict, and negotiation. Emphasizes the identification and analysis of archetypal strategic situations in bargaining. Goals of the course are to provide a foundation for applying game-theoretic analysis, both formally and intuitively, to negotiation and bargaining; to recognize and assess archetypal strategic situations in complicated negotiation settings; and to feel comfortable in the process of negotiation. (F,SP) Staff

212. Managerial Decisions in Regulated Industries. (3) Three hours of evening lecture per week. Prerequisites: Business Administration E201A or equivalent. Formerly Business Administration E212. Survey of the rationale for and effects of regulation and deregulation of American industries. Economic principles if industry will be applied to the study of five key sectors of the U.S. economy: transportation, communications, energy, utilities, financial services, and health care. Includes recent changes in regulatory policy and analysis of the implications of continuing regulation or deregulation for the management of, and public policies toward, these industries.

214. Forecasting Methods for Business. (3) Three hours of evening lecture per week. Prerequisites: Business Administration E201B. Formerly Business Administration E214. The course will focus on a variety of currently used forecasting techniques. These include econometric models, time series extrapolation, and computer-oriented problem sets and a forecasting project are required.

215. Business Strategies for Emerging Markets: Management, Investment, and Opportunities. (3) Three hours of lecture per week. This course helps students to study the institutions of emerging markets that are relevant for managers, analyze opportunities presented by emerging markets, analyze the additional ethical challenges and issues of social responsibility common in emerging markets, and learn to minimize the risks in doing business in emerging markets. This course is a combination of lectures, class participation, and cases. (F,SP)

217. Topics in Economic Analysis and Policy. (5-3) Course may be repeated for credit. One-half to three hours of lecture per week. Advanced study in the field of economic analysis and policy. Topics will vary from year to year and will be announced at the beginning of each semester. (F,SP) Staff

218A. International Finance. (3) Three hours of lecture per week. Prerequisites: Business Administration 210B. Formerly Business Administration E225. This course introduces students to the institutions and operation of the international macroeconomic environment; special attention is paid to international financial arrangements relevant to the multinational corporations. Topics include: foreign exchange and capital markets; the balance of payments; open economy macroeconomics; exchange rate determination; history of the international financial system; arbitrage and hedging; interest rate and the balance of financial flows. (F,SP)

218B. Theory and Institutions of International Trade. (3) Three hours of lecture per week. Prerequisites: Business Administration E201A. Formerly Business Administration E227. The course focuses on determining patterns, patterns of international trade, United States trade law; bilateral and multilateral approaches to trade liberalization, and current issues in international trade policy. Yellen

222. Financial Information Analysis. (3) Three hours of lecture per week. Formerly Business Administration E222. Issues of accounting information evaluation with special emphasis on financial statements by decision makers outside the firm. The implications of recent research in finance and accounting for external reporting issues will be explored. Emphasis will be placed on models that describe the user’s decision context. (SP)


224A. Managerial Accounting. (2) Six hours of evening lecture per week for five weeks. Prerequisites: E204. Formerly Business Administration E202B. Management is dependent on an information system which provides dependable, timely, and relevant information to all decision makers. The goal of this course is to identify the information needs of managers and to develop the methods by which managerial accountants can provide the necessary data through appropriate budget, cost, and other informational systems.

224B. Advanced Managerial Accounting. (2.5) Five hours of evening lecture per week. Prerequisites: Business Administration E202A and E202B. Formerly Business Administration E224. This course includes the theory of management accounting, its applications, and the use of advanced analytical techniques to solve complex, critical organizational problems. Emphasis will be placed on models that describe the user’s decision context. (SP)

225. Management Planning and Control Systems. (3) Three hours of evening lecture per week. Prerequisites: Completion of all MBA core courses or their equivalent. Formerly Business Administration E229. Strategic planning, management control systems, budgeting, internal pricing, and related topics concerning with planning and control of complex organizations including multi-national firms and not-for-profit organizations. Designed for students interested in management regardless of major field.

227B. Topics in Taxation. (3) Course may be repeated for credit. Three hours of lecture per week. Prerequisites: Business Administration E202A and E202B or their equivalents. Formerly Business Administration E228. This course will cover personal or corporate taxation or both. Topics will vary from semester to semester. (F,SP) Staff

231. Corporate Financial Management. (3) Three hours of evening lecture per week. Prerequisites: Business Administration E230. Formerly Business Administration E234. Financial policies of firms including sources and allocation of capital, structure, debt, dividends, working capital, and mergers. Development of theory and application to financial management decisions. (F,SP)


233. Investments. (3) Three hours of lecture and one hour of optional discussion per week. Prerequisites: Business Administration E201B and E203 or E230. Formerly Business Administration E233. This course will analyze the role of financial markets and financial institutions in allocating capital. The major focus will be on the theories and practice of financial institutions and the functions of commercial banks, investment banks, and other financial intermediaries will be covered, and aspects of the regulation of these institutions will be examined. (F,SP)

235. Advanced Topics in Financial Institutions. (3) Course may be repeated for credit. One 3-hour evening lecture per week. Prerequisites: Business Administration E233. Formerly Business Administration E235. Normative issues in financial institutions, regulation of financial institutions, the analysis of money and capital markets, and empirical studies on financial institutions and financial markets. Topics covered will vary. (F,SP)

236A. Futures and Option Markets. (2) Course may be repeated for credit. Two hours of lecture per week. Prerequisites: Business Administration E233. Formerly Business Administration E236. Normative models for futures and option valuation, valuation of options and securities and portfolio behavior. Topics covered will vary. (F,SP)

236B. Investment Strategies and Styles. (2) Course may be repeated for credit. Two hours of lecture per week. Prerequisites: Business Administration E233 plus one additional graduate finance course. Formerly Business Administration E239. Introduction to alternative investment strategies, and styles as practiced by leading money managers. A money manager will spend approximately half of the class discussing his general investment philosophy. In the other half, students will analyze current issues in investment management. Students will be expected to use the library's resources, class handouts, and their ingenuity to address a set of questions related to the firm's investment value. (F,SP) Staff

236C. Global Financial Services. (3) Three hours of lecture per week. Survey of the forces changing and shaping global finance and intermediation, especially the effects of greater ease of communication, deregulation, and globalization. Emphasis will continue to be essential to corporate finance and intermediation, e.g., investment analysis, valuation, structured finance/ securitization, and derivative applications. The case methods is utilized with occasional additional assigned readings and text sources. (F,SP) Staff

236D. Portfolio Management. (3) Three hours of lecture per week. Prerequisites: 203 or consent of instructor. This course explores the broad range of portfolio management in practice. The class will examine the investment strategies, characteristics, operation, and concerns unique to each type of portfolio. Practitioners will present descriptions of their businesses as well as methods and strategies that they employ. (F,SP) Staff

236E. Mergers and Acquisitions: A Practical Primer. (2) Two hours of lecture per week. Prerequisites: 203 or consent of instructor. An in-depth look at merger and acquisition case studies and day-to-day practices and techniques used in change of control transaction. Topics include valuation, financing, deal structuring, tax and accounting considerations, agreements, closing documents, practices used in management buyouts, divestitures, hostile takeovers, and takeover defenses. Also covers distinctions in technology M&A, detecting corruption in cross border transaction attempts, and betting on deals through risk arbitrage. Blend of lectures, case studies, and guest lectures. (F,SP) Staff

236F. Behavioral Finance. (3) Three hours of lecture per week. Prerequisites: 203. This course looks at the influence of decision heuristics and biases on investor welfare, financial markets, and corporate decisions. Topics include overconfidence, attribution theory, representativeness heuristic, availability heuristic, anchoring and adjustment, prospect theory, “Winner’s Curse,” speculative bubbles, IPOs, market efficiency, limited liability, and outside margin of arbitrage, relative mis-pricing of common stocks, the tendency to trade in a highly correlated fashion, investor welfare, and market anomalies. (F,SP) Staff

237. Topics in Finance. (5-3) Course may be repeated for credit. One-half to three hours of lecture per week. Advanced study in the field of finance. The course will vary from year to year and will be announced at the beginning of each semester. (F,SP)

240. Risk Management via Optimization and Simulation. (1) Seven hours of lecture for two weeks. Pre-
242. Strategic Planning of Production and Operations. (3) Three hours of evening lecture per week. Prerequisites: Business Administration E240. Formerly Business Administration E241. Strategic issues involved in planning the production and logistics of a firm and models of those functions are taught. (F,SP)

244D. Management Information Systems. (3) Three hours of lecture per week. Prerequisites: Business Administration E204 and familiarity with computer programming. Formerly Business Administration E248. This course covers the management of organizational issues associated with the implementation and growth in organizations of computer-based administrative information systems. A management perspective is taken. The course addresses the role of technology in services. Blend of case studies, group projects, class discussions, and selected readings. (F,SP,Staff)

246A. Service Strategy. (3) Three hours of lecture per week. Prerequisites: 204 or Master of Business Administration 204 or consent of instructor. This course is an in-depth examination of the management and organizational principles involved in the planning, execution, and management of service businesses. It covers both strategic and tactical aspects, including the development of a strategic service plan, developing a customer loyalty strategy, developing customer loyalty and satisfaction, improving productivity and service quality, service innovation, and the role of technology in services. Blend of case studies, group projects, class discussions, and selected readings. (F,SP,Staff)

247A. Topics in Manufacturing and Operations. (5-3) Course may be repeated for credit. One-half to three hours of lecture per week. Advanced study in the field of Manufacturing and Operations. Topics will vary from year to year and will be announced at the beginning of each semester. (F,SP,Staff)

248A. Supply Chain Management. (3) Three hours of lecture per week. Prerequisites: 204 or Master of Business Administration 204 or equivalent. Supply chain management concerns the flow of materials and information in multistage production and distribution networks. This module builds on knowledge of inventory models and analytical decision support tools necessary to design, implement, and sustain successful supply chain strategies. Topics include demand and supply management, inventory management, supply chain risk management, supply chain analytics, and the role of information technology in supply chain management. (F,SP,Staff)

249A. Information Technology Strategy. (3) Three hours of lecture per week. This course focuses on the use of information technology (IT) by traditional firms and examines the impact of IT on firms’ strategy. The module introduces the goals of understanding how IT enables new strategies and how existing strategies adapt to IT innovations. This course covers IT technologies used throughout the organization, including mobile communications, systems for online payment, business-to-business transactions, customer relationship management, and supply chain management. (F,SP,Staff)

251. Human Resources Management. (3) One 3-hour evening lecture per week. Prerequisites: Business Administration E205 or consent of instructor. Formerly Business Administration E251. An introduction to the role of human resources management and techniques associated with managing the personnel function. Topics include the processes of recruitment, selection, placement, training, and evaluation of employees and the role of staff managers. Formerly Business Administration E251. (F,SP,Staff)

252. Negotiations and Conflict Resolution. (3) Three hours of lecture per week. Prerequisites: Business Administration E205. Formerly Business Administration E252. A study of the negotiations process, including techniques for determining, refining, and managing conflicts. The negotiation process is modeled after the relationship dynamics of organizations. The role of the manager in working with other managers and in making good faith efforts to resolve conflicts. (F,SP,Staff)

253. Information and Technology-Based Marketing. (3) Three hours of lecture per week. Prerequisites: Business Administration E206. Formerly Business Administration E262B. Information technology has allowed firms to gather and process large quantities of information about consumers’ choices and reactions to marketing campaigns. However, few firms have the expertise to intelligently act on such information. This course addresses this shortcoming by teaching students how to use computer software to better market to consumers. In addition, the course addresses how information technology affects marketing strategy. (F,SP,Staff)

254. Power and Politics in Organizations. (2) Two hours of lecture per week. This course addresses how organizations distribute various resources and how managers can learn where these resources are concentrated and where they are scarce. Topics include communication skills, control issues, rewards and penalties, and politics within the organization. (F,SP,Staff)

255. Creativity in Business. (3) Three hours of lecture per week. Prerequisites: Business Administration E205 or consent of instructor. Formerly Business Administration E255. This course examines the concept of creativity, bringing to light its nature in individuals, groups, and organizations. The course uses reading materials, cases, classroom, and home exercises to help students understand and be able to use creativity in their own working lives. (F,SP,Staff)

256. Service Management. (3) Three hours of lecture per week. Formerly Business Administration E265. The service delivery process serves many unique needs. A special course in service delivery and customer interactions. (F,SP,Staff)

257. Topics in Organizational Behavior and Industrial Relations. (5-3) Course may be repeated for credit. One-half to three hours of lecture per week. Advanced study in the field of Organizational Behavior and Industrial Relations. Topics will vary from year to year and will be announced at the beginning of each semester. (F,SP,Staff)

258A. International Business: Designing Global Organizations. (3) Three hours of lecture per week. Prerequisites: 205. This course is about flexible organizational designs and adaptive leadership strategies in global markets. It will be of special interest to students participating in study abroad programs. Formerly Business Administration E258A. Formerly Business Administration E258. The course examines the concept of creativity, bringing to light its nature in individuals, groups, and organizations. The course uses reading materials, cases, classroom, and home exercises to help students understand and be able to use creativity in their own working lives. (F,SP,Staff)

260. Consumer Behavior. (3) Three hours of lecture per week. Prerequisites: Business Administration E206 or equivalent. Formerly Business Administration E260. Formerly Business Administration E260. A study of the role of the individual consumer in the marketplace and the interaction of consumer behavior with marketing strategy. The course covers the role of individual consumer in the marketplace and the interaction of consumer behavior with marketing strategy. This course is completed through the examination of tools to select, manage, and motivate channel partners. (F,SP,Staff)

262. Brand Management and Strategy. (3) Three hours of lecture per week. Prerequisites: Business Administration E206A or equivalent. Formerly Business Administration E262A. The focus of this course is on developing students to formulate and critique complete marketing programs including product, price, distribution, and promotion policies. Case analyses are heavily used. The course is designed primarily for students who will take a limited number of advanced marketing courses and wish an integrated approach. (F,SP,Staff)

263. Information and Technology-Based Marketing. (3) Three hours of lecture per week. Prerequisites: Business Administration E206. Formerly Business Administration E262B. Information technology has allowed firms to gather and process large quantities of information about consumers’ choices and reactions to marketing campaigns. However, few firms have the expertise to intelligently act on such information. This course addresses this shortcoming by teaching students how to use computer software to better market to consumers. In addition, the course addresses how information technology affects marketing strategy. (F,SP,Staff)

264. High Technology Marketing Management. (3) Three hours of lecture per week. Prerequisites: Business Administration E206. Formerly Business Administration E262B. Information technology has allowed firms to gather and process large quantities of information about consumers’ choices and reactions to marketing campaigns. However, few firms have the expertise to intelligently act on such information. This course addresses this shortcoming by teaching students how to use computer software to better market to consumers. In addition, the course addresses how information technology affects marketing strategy. (F,SP,Staff)

265. Integrated Marketing Communications. (3) Three hours of lecture per week. Formerly Business Administration E265. A specialized course in advertising, focusing on market segmentation and decision making, creative copywriting, advertising, direct marketing, sales promotion, media strategies and selection, public relations campaign planning, and integration of advertising in marketing mix. Formerly Business Administration E265. A specialized course in advertising, focusing on market segmentation and decision making, creative copywriting, advertising, direct marketing, sales promotion, media strategies and selection, public relations campaign planning, and integration of advertising in marketing mix. Formerly Business Administration E265. (F,SP,Staff)

266. Channels of Distribution. (3) Three hours of lecture per week. Formerly Business Administration E266. The success of any marketing program often weighs heavily upon its co-execution by members of the firm’s distribution channel. This course seeks to provide an understanding of how the strategic and tactical roles of the channel can be identified and managed. This is accomplished, first, through studying the broad economic and social forces that govern the channel. It is completed through the examination of tools to select, manage, and motivate channel partners. (F,SP,Staff)

266A. Sales Force Management. (1) Two hours of lecture per week. Formerly Business Administration E266. The sales force is a key (and not inexpensive) component of a firm’s overall marketing strategy. This course examines the selling process and deals with the dynamics of personal selling and the role of salespeople. Formerly Business Administration E268. The sales force is a key (and not inexpensive) component of a firm’s overall marketing strategy. This course examines the selling process and deals with the dynamics of personal selling and the role of salespeople. Formerly Business Administration E268. (F,SP,Staff)

267. Topics in Marketing. (5-3) Course may be repeated for credit. One-half to three hours of lecture per week. Advanced study in the field of Marketing. Topics will vary from year to year and will be announced at the beginning of each semester. (F,SP,Staff)

269. Pricing. (3) Three hours of lecture per week. This three-module course aims to equip students with proven concepts, techniques, and frameworks for assessing and formulating pricing strategies. The first module develops the economic and behavioral foundations of pricing. The second module discusses several innovative pricing concepts including price customization, nonlinear pricing, price matching, and dynamic pricing. The third module analyzes the strengths and weaknesses of several Internet-based, buyer-determined pricing models. (F,SP,Staff)

271. The Interaction of Business and Government. (3) Three hours of evening lecture per week. Prerequisites: Business Administration E206 or equivalent. Formerly Business Administration E271. Theory of the mixed economy. Methods of interaction between government and business including government pur-
chasing, regulation, resource allocation, economic sta-
bilization, planning and sponsorship of economic de-
velopment. “Inter-penetrated” activities including space, defense, atomic energy, public utility, and foreign busi-
ness operations.

275. Business Law: Managers and the Legal En-
vironment. (3) Three hours of lecture per week. Prereq-
uisites: Completion of all core courses or consent of instructor. A manager must understand the legal en-
vironment, the role of business in society, and the techni-
cal aspects of business and business organizations. This course addresses the legal aspects of business relationships and business agreements. Topics covered include contracts, business organization, duties of officers and directors, intellectual property, antitrust, contracts, employment relationships, criminal law, and debtor-creditor rela-
tionships including bankruptcy. (F,SP) Staff

277. Special Topics in Business and Public Policy. (1-3) One to three hours of lecture per week. Prereq-
uisites: Staff. Formerly Business Administration E278. Topics vary by semester at discretion of in-
tstructor and by student demand. Topical areas include business ethics, sustainable development, and the role of corpo-
rate social responsibility in the mixed economy; managing the external affairs of the corporation, including community, government, media and stake-
holder relationships; research, development, and the effects of government regulation of business on technological innovation and adoption. (F,SP) Staff

280. Real Estate and Urban Land Economics. (3) Three hours of lecture per week. Formerly Business Administration E280G. Formerly Business Administra-
tion E280. Two to three hours of lecture per week. Pre-
requisites: Staff. An operationally focused course that aims to develop the foundational knowledge required for successful product development. Through readings, cases, seminars, guest speakers, applied projects, and student research, students discover the basic tools, methodologies, and frameworks that are used in new product development management. Course content includes the following: project planning and execution, process and program development, and risk and quality management. (F,SP) Staff

284. Seminar in Real Estate Investment Analysis. (3) Three hours of lecture per week. Prerequisites: Consent of instructor. Formerly Business Administra-
tion E284. Formerly Business Administration E280G. Formerly Business Administration E280. Three hours of lecture per week. Prerequisites: Staff. An operationally focused course that aims to develop the foundational knowledge required for successful product development. Through readings, cases, seminars, guest speakers, applied projects, and student research, students discover the basic tools, methodologies, and frameworks that are used in new product development management. Course content includes the following: project planning and execution, process and program development, and risk and quality management. (F,SP) Staff

282. Real Estate Financing. (3) Three hours of lec-
ture per week. Formerly Business Administration E280E, and background in the basics of finance, micro-
economics, macro-economics, statistics and quantita-
tive analysis. Formerly Business Administration E280. Students will be introduced to the fundamentals of real estate financial analysis, including elements of mortgage financing and taxation. The course will apply the standard tools of financial analysis to specialized real estate transactions and real estate tax-
evaluation. (F,SP) Staff

284. Seminar in Real Estate Investment Analysis. (3) Three hours of lecture per week. Prerequisites: Consent of instructor. Formerly Business Administra-
tion E284. Formerly Business Administration E280G. Formerly Business Administration E280. Three hours of lecture per week. Prerequisites: Staff. An operationally focused course that aims to develop the foundational knowledge required for successful product development. Through readings, cases, seminars, guest speakers, applied projects, and student research, students discover the basic tools, methodologies, and frameworks that are used in new product development management. Course content includes the following: project planning and execution, process and program development, and risk and quality management. (F,SP) Staff

290. Project Management Case Studies. (1) One to three hours of lecture per week. Prerequisites: Graduate standing. Formerly Business Administration 290L. One to three hours of lecture per week. Prerequisites: Graduate Standing. Formerly Business Administration 290K. This course is intended to provide a strong introduction to students on contemporary issues concerning product and ser-
vices quality. A major premise is that quality competition may now be the most important determinant of the success of major corporations. The course will focus on the principles of quality improvement, and techniques for effective planning and budgeting. (F,SP) Staff

290T. Topics in Management of Technology. (1-3) Three hours of lecture per week. Prerequisites: Graduate standing. Formerly Business Administration 290T. One to three hours of lecture per week. Prerequisites: Graduate Standing. Formerly Business Administration 290K. This course is intended to provide a strong introduction to students on contemporary issues concerning product and ser-
vices quality. A major premise is that quality competition may now be the most important determinant of the success of major corporations. The course will focus on the principles of quality improvement, and techniques for effective planning and budgeting. (F,SP) Staff

291A. Speaking as a Leader. (2) One hour of lecture and two hours of discussion per week. Prerequisites: Graduate standing. Formerly Business Administration 291A. Leaders must be capable of inspiring commitment in their constituencies rather than merely demanding compliance. This course will include two hours of discussion per week. Prerequisites: Graduate standing. Formerly Business Administration 291A. Leaders must be capable of inspiring commitment in their constituencies rather than merely demanding compliance. This course will include two hours of discussion per week. Prerequisites: Graduate standing. Formerly Business Administration 291A. Leaders must be capable of inspiring commitment in their constituencies rather than merely demanding compliance. This course will include two hours of discussion per week. Prerequisites: Graduate standing. Formerly Business Administration 291A. Leaders must be capable of inspiring commitment in their constituencies rather than merely demanding compliance. This course will include two hours of discussion per week. Prerequisites: Graduate standing. Formerly Business Administration 291A. Leaders must be capable of inspiring commitment in their constituencies rather than merely demanding compliance. This course will include two hours of discussion per week. Prerequisites: Graduate standing. Formerly Business Administration 291A. Leaders must be capable of inspiring commitment in their constituencies rather than merely demanding compliance. This course will include two hours of discussion per week. Prerequisites: Graduate standing. Formerly Business Administration 291A. Leaders must be capable of inspiring commitment in their constituencies rather than merely demanding compliance. This course will include two hours of discussion per week. Prerequisites: Graduate standing. Formerly Business Administration 291A. Leaders must be capable of inspiring commitment in their constituencies rather than merely demanding compliance. This course will include two hours of discussion per week. Prerequisites: Graduate standing. Formerly Business Administration 291A. Leaders must be capable of inspiring commitment in their constituencies rather than merely demanding compliance. This course will include two hours of discussion per week. Prerequisites: Graduate standing. Formerly Business Administration 291A. Leaders must be capable of inspiring commitment in their constituencies rather than merely demanding compliance. This course will include two hours of discussion per week. Prerequisites: Graduate standing. Formerly Business Administration 291A. Leaders must be capable of inspiring commitment in their constituencies rather than merely demanding compliance. This course will include two hours of discussion per week. Prerequisites: Graduate standing. Formerly Business Administration 291A. Leaders must be capable of inspiring commitment in their constituencies rather than merely demanding compliance. This course will include two hours of discussion per week. Prerequisites: Graduate standing. Formerly Business Administration 291A. Leaders must be capable of inspiring commitment in their constituencies rather than merely demanding compliance. This course will include two hours of discussion per week. Prerequisites: Graduate standing. Formerly Business Administration 291A. Leaders must be capable of inspiring commitment in their constituencies rather than merely demanding compliance. This course will include two hours of discussion per week. Prerequisites: Graduate standing. Formerly Business Administration 291A. Leaders must be capable of inspiring commitment in their constituencies rather than merely demanding compliance. This course will include two hours of discussion per week. Prerequisites: Graduate standing. Formerly Business Administration 291A. Leaders must be capable of inspire
individually supervised study. This course is an advanced case-based learning experience facing significant challenges to achieving that potential. The course will provide students with an education in the entrepreneurial process. (F,SP) 

295B. Venture Capital and Private Equity. (3) Three hours of lecture per week. Prerequisites: 295A and 234X. This advanced case-based course intended to provide the background, tools, and themes of the venture capital industry. The course is organized around the four modules of the private equity cycle: 1) fund raising—examines how private equity funds are raised and structured, 2) investing—considers the interactions between private equity investors and the entrepreneurs that they finance, 3) exiting—examines the process through which private equity investors exit their investments; and 4) new frontiers—views many of the key ideas developed in the course. (F,SP) Staff 

295D. New Venture Finance. (2) Two hours of lecture per week. This course is about financing new ventures, emphasizing those entrepreneurs that have the possibility of creating a national or international impact or both. It will take two perspectives—the entrepreneur's and the investor's—and it will place a special focus on the small venture process, including how the entrepreneur formed and managed, accessing the public markets, mergers, and strategic alliances. (F,SP) 

295E. Case Studies in Entrepreneurship. (2) Two hours of lecture per week. This course integrates the learning from entrepreneurship and business administration aca- demic experience. Classes will include development of an analysis of cases based on the internship, and opportunities to meet with management of the host programs. By the end of the semester, students will better understand what it takes to run an entrepreneurial enterprise. (F,SP) Staff 

295F. Customer and Business Development in Hi-Tech Enterprise. (2) Two hours of lecture per week. This course is about how to successfully organize and manage business development in a startup. For the purpose of this course, a "startup" can either be a new venture, or an existing company entering a new market. Both must solve a common set of issues: who are our customers? How do we build the right team? How do we scale sales? These issues are at the heart of the "Customer Development" process covered in this course. (F,SP) Staff 

295G. Investing in Entrepreneurial Opportunities: Business Valuation, Methodology, and Process. (2) Two hours of lecture per week. This course will provide students with an education in the complexities and unique problems of entrepreneurship in companies with great growth potential, but the high-risk and uncertain challenges to achieving the potential. This class is designed to provide students with the tools and skills most critical to successfully screening, investing in, and/or leading companies that have both a great set future growth opportunities and a great set of current problems. This class will use case studies, pragmatic exercises, and the energy, enthusiasm, and intellectual capacity of its students to create a great learning environment. (F,SP) Staff 

295I. Entrepreneurship Workshop for Startups. (2) Two hours of lecture per week. This workshop is intended to focus on small business strategy, structure, product development, and venture project under development. The business concept may be in the startup mode or further along in its evolution. The pedagogy is one of guided entrepreneurship. Students, often in teams, will undertake the real challenges of building a venture. Students must be willing to discuss their projects with the other groups in the workshop, as group deliberation of the entrepreneurial challenges is a key component of the class. (F,SP) Staff 

295T. Topics in Entrepreneurship. (5-3) Course may be repeated for credit. One-half to three hours of lecture per week. Advanced study in the field of entrepreneurship. Topics will vary from year to year and will be announced at the beginning of each semester. (F,SP) Staff 

296. Special Topics in Business Administration. (1-3) Course may be repeated for credit. One unit credit represents one hour of lecture per week. Prerequisites: Graduate standing. Formerly Business Administration E296. Advanced study in various fields of business administration. Topics will vary from year to year and will be announced at the beginning of each semester. (F,SP) Staff 

298S. Seminar in International Business. (2,3) Four to five and one-half hours of fieldwork per week for international students. This course involves a series of speaker and seminar-type classes in preparation for a two-week study tour of a specific country or region. Participants will visit companies and organizations and meet with business leaders to evaluate the opportunities and challenges of operating in a specific country or region. Evaluation is based on student presentations, participation, and a research paper. (F,SP) Staff 

298X. EWMBA Exchange Program. (1-15) Course may be repeated for credit. One to fifteen hours of lecture per week. Must be taken on a satisfactory/unsatisfactory basis. Prerequisites: Successful completion of all core courses; good academic standing. (F,SP) Staff 

299B. Global Strategy and Multinational Enterprise. (3,2) Three to two hours of lecture per week. Prerequisites: All core courses. Formerly Business Administration E286. Identifies the management challenges facing international firms. Attention to business strategies, organizational structures, and the role of governments in the global environment. Special attention to the challenges of developing and implementing global new product development strategies when industrial structures and government policies differ. Efficacy of joint ventures and strategic alliances. Implications for industrial policy and global governance. (F,SP) Staff 

299E. Competitive Strategy. (2,3) Three hours of lecture per week. Prerequisites: Business Administration E201A, E201B, E204. Formerly Business Administration E296. This course addresses (1) the nature of industry and principal policies for firms in competitive environments; optimal strategies through time; strategies in the presence of imperfect information. How differing market structures and government policies (including taxing) affect output and pricing decisions. Social welfare implications of decisions by competitive firms also explored. (F,SP) Staff 

299M. Marketing Strategy. (3) Three hours of evening seminar per week. Prerequisites: Business Administration E202B, E203, E205, E206. Formerly Business Administration E267. Strategic planning theory and methods with an emphasis on customer, competitor, industry, and environmental analysis and its application to strategy development and choice. (F,SP) 

299O. Organizing for Strategic Advantage. (3) Three hours of lecture per week. Prerequisites: Business Administration E205. Formerly Business Administration E280. Course examines current models of entrepreneurial practice, with an emphasis on the historical foundations. Students will apply current theory to traditional cases and to current examples of organization adaptation in the business press. In addition, the course includes interpretation of regression analysis, model formation and testing, and diagnostic checking. (F,SP) Staff 

Executive Master's in Business Administration 

2002. Decision Models. (1) Five hours of lecture for three weeks. This core course introduces students to quantitative concepts, techniques, and software with which to solve decision problems. The objective of this course is to give students critical consumers of statistical analysis available commercial software packages. Specific concepts include interpretation of regression analysis, model formation and testing, and diagnostic checking. (F,SP) Staff 

2005S. Global Economic Environment. (2) Ten hours of lecture for three weeks. Course addresses the determination of economic concepts and financial practices at work in the global economic environment. Topics include long-run productivity and growth, short-run economic fluctuations, and open economies, exchange rates and the balance of payments, the natural rate of unemployment, and the causes and consequences of inflation. The instructor will draw examples from the number of countries and a variety of economies to illustrate theoretical concepts. (F,SP) Staff 

200A. Financial Accounting. (2) Ten hours of lecture for three weeks. Formerly Business Administration 200A. This core course examines accounting measurement techniques for general-purpose financial reports. An objective of this course is to provide not only a working knowledge but also a clear understanding of the contents of published financial statements. (F,SP) Staff 

202B. Managerial Accounting. (1) Ten hours of lecture for three weeks. Course addresses the use of accounting information throughout the planning, operation, and control stages of managing an organization. The course is divided into three sections to reflect these three stages of management. Course content includes (1) short-term decision-making, (2) information received during operations (cost accounting), and (3) information for control and performance evaluation. (F,SP) Staff 

200. Finance. (2) Ten hours of lecture for three weeks. This core course examines the wide menu of available financial and capital markets, the institutional structure of the U.S. and international financial markets, and the market mechanisms for trading securities. Topics include discounting, cap-
204. Operations Management. (2) Ten hours of lecture for three weeks. Prerequisites: 200S. This core course provides students with an understanding of the basic concepts underlying a management systems approach to business and introduces them to the tools that are available to deal with these issues. Students will also learn pertinent fundamental concepts in management science that are applicable to other functional areas. (F,SP) Staff

205. Creating Effective Organizations. (2) Three hours of lecture per week. Ten hours of lecture for three weeks. Prerequisites: 200S, Formerly Business Administration 205. This core course surveys knowledge about behavior of organizations and in organizations. The course will include study of the issues of individual behavior, group functioning, and the actions of organizations in their environments, and analysis from a number of theoretical perspectives of such problems as work motivation, task design, leadership, communication, organizational design, and innovation. The class will explore the implications for the management of organizations through examples, cases, and exercises. (F,SP) Staff

206. Marketing Organization and Management. (2) Ten hours of lecture for three weeks. Prerequisites: 201A or equivalent. This course provides an overview of the marketing system and the marketing concept. Students will consider competing strategies as companies aim to achieve their own goals and objectives, often at a pace significantly faster than for most goods in the economy. Under such circumstances, the marketing task faced by the high technology firm differs in some ways from the usual. The purpose of this advanced elective course is to explore these differences. (F,SP) Staff

207. Ethics and Responsibility in Business. (1) One and one-half hours of lecture for ten weeks. This course provides the ability to critically analyze, and appropriately respond to the social, ethical, and political challenges that face managers operating in a global economy. (F,SP) Staff

209. Competitive and Corporate Strategy. (2) Ten hours of lecture for three weeks. Prerequisites: 201A or equivalent. This is a core course designed to introduce managers to the processes involved in industry and market analysis, the development of a business strategy, competitive positioning, planning, and the implementation of business programs. Students will consider competing strategies as companies aim to achieve their own goals and objectives, often at the expense of their rivals, from the perspective of a general manager charged with the responsibility of all, or a portion of a company’s performance in a variety of competitive and corporate contexts. (F,SP) Staff

218A. International Finance. (2) Ten hours of lecture for three weeks. Prerequisites: 201B or equivalent. This advanced elective course introduces students to the institutions and operation of the international macroeconomic environment. International financial arrangements relevant for managers of multinational corporations are a key focus. Topics include the following: foreign exchange and capital markets, the balance of payments, open economy macroeconomics, exchange rate determination, history of the international financial system, asset and liability hedging, and international aspects of financial decisions. (F,SP) Staff

222. Financial Information Analysis. (2) Ten hours of lecture for three weeks. Prerequisites: 202A or consent of instructor. This advanced elective course addresses issues of accounting information evaluation with special use of financial statements by decision makers external to the firm. It explores the implications of recent financial research and accounting for external reporting issues and utilizes models that describe the user’s decision context. (F,SP) Staff

233. Investments. (2) Three hours of lecture per week. This course will examine four different types of asset markets: equity markets, fixed income markets, futures markets, and options markets. It will focus on the valuation of assets in these markets, the empirical evidence on asset valuation models, and strategies that can be employed to achieve various investment goals. (F,SP)

244. Information Technology Strategy. (2) Ten hours of lecture for three weeks. This advanced elective course explores the factors strongly impacting the successful commercial application of new computing and communications products and services, based on underlying technologies such as electronics and software. Topics include technology trends and limits, economics, standardization, intellectual property, government policy, and industrial organization, as well as strategies to manage the development of successful products and services. (F,SP) Staff

252. Managerial Negotiations. (2) Ten hours of lecture for three weeks. A study of the negotiations process, including negotiations among buyers and sellers, managers and subordinates, company units, companies and organizational agencies, and management and labor. Both two-party and multi-party relations are covered. Coursework includes readings, lectures, and discussion of case material and simulations of real negotiations. A key focus of this course is the role of third parties in resolving disputes. (F,SP) Staff

256. Leadership. (2) Ten hours of lecture for three weeks. Prerequisites: 205 or equivalent. In this advanced elective course, students analyze recent literature and developments related to such topics as organization development, environmental determinants of organizational structure, decision making, group behavior, management of professionals, management in temporary structures, cross-cultural studies of management organizations, and industrial relations systems and practices. (F,SP) Staff

264. High Technology Marketing. (2) Ten hours of lecture for three weeks. Prerequisites: 206 or equivalent. High technology refers to that class of products and services which is subject to technological change at a pace significantly faster than for most goods in the economy. Under such circumstances, the marketing task faced by the high technology firm differs in some ways from the usual. The purpose of this advanced elective course is to explore these differences. (F,SP) Staff

275. Business Law: Managers and the Legal Environment. (2) Ten hours of lecture for three weeks. Prerequisites: 205 or consent of instructor. A manager must understand the legal environment which impact business and understand how to work effectively with lawyers. This course addresses business law with a focus on business relationships and business agreements. Topics covered include forms of business organization, duties of officers and directors, intellectual property, antitrust, contracts, employment relationships, criminal law, and tort liability. (F,SP) Staff

285. Real Estate Investments. (2) Ten hours of lecture for three weeks. Prerequisites: Completion of all core courses or consent of instructor. The course covers the real estate investment process from the standpoint of management of real estate investment. It begins with pro forma investment analysis. We then view development sites across the main sectors: residential, retail, office, industrial, and hotel. We also cover contracting with public and private sector partners and related steps. Finally, we study loan and equity structures (REITs), the secondary mortgage market, real estate in investment portfolios. (F,SP) Staff

290. Management of Technology. (2) Ten hours of lecture for three weeks. Prerequisites: 200S. This advanced elective course gives students an overview of the main topics encountered by managers of technology. It includes the full chain of innovative activities beginning with R&D and extending through production and marketing. Why do many existing firms fail to innovate? How are the appropriate structures used by Haas and COE faculty working in relevant areas and facilitates visits to leading tech firms in Silicon Valley. (F,SP) Staff

292P. Strategic CSR. (1) One and one-half hours of lecture for ten weeks. Discuss the field strategic CSR through a series of lecture, guest speakers, and projects. It will examine best practices used by companies to engage in socially responsible practices. It will provide students with a flavor of the complex dilemmas one can face in business in trying to do both “good for society” and “well for shareholders.” It looks as CSR from a corp. strategy perspective, and how the supply chain, production, product design, and facility development impact the outcomes and bottom line profits. (F,SP) Staff

293A-293B. Team Project Course. (3-3) Team project. Credit and grade to be awarded on completion of sequence. This required two-term course gives students the opportunity to work with faculty at the Haas School and Columbia Business School on a real-life team project similar to a professional consulting assignment or new venture start-up project that requires them to analyze and resolve complex business problems using the business skills, frameworks, and tools acquired to date in the core curriculum. (F,SP) Staff

295A. Entrepreneurship and Innovation. (2) Two hours of lecture per week. The development of creative new marketing strategies for new ventures, as well as the resolution of specific marketing problems in smaller companies which provide innovative goods and services. Emphasis is on decision making under conditions of weak data, inadequate resources, emerging markets, and rapidly changing environments. (F,SP) Staff

295F. Entrepreneurial Finance. (2) Ten hours of lecture for three weeks. Prerequisites: 203 or equivalent or consent of instructor. This advanced elective course is about financing new entrepreneurial ventures, emphasizing those that have the possibility of creating a national and/or international impact. It will take two perspectives: the entrepreneur’s and the investors’, and it will have a special focus on the venture capital process, including how ventures are formed and managed, valuation, accessing the public markets, mergers, and strategic alliances. (F,SP) Staff

295T. Special Topics in Entrepreneurship. (1-3) Three hours of lecture per week. Prerequisites: 200S. In all core courses or equivalent. All core courses or equivalent are available to deal with these issues. Students will consider competing strategies as companies aim to achieve their own goals and objectives, often at the expense of their rivals, from the perspective of a general manager charged with the responsibility of all, or a portion of a company’s performance in a variety of competitive and corporate contexts. (F,SP) Staff

296. Special Topics in Business Administration. (1-3) Course may be repeated for credit. One to three hours of lecture per week. Advanced study in various fields of business administration. Topics will vary from year to year and will be announced at the beginning of each semester. (F,SP) Staff

298A. International Business. (3) Fifteen hours of lecture for three weeks. This required course entails individual research on and directed study of international businesses and the management challenges of those businesses in preparation for a one-week field study session abroad (in Asia or Europe) at the end of the program. The course culminates in a report on an applied management project undertaken in connection with the field studies and company visits. (SP) Staff

298C. International Field Seminar. (3) Course may be repeated for credit. Thirty hours of fieldwork per week for one week. Prerequisites: 298A. This required course entails an experiential study of an international business topic undertaken during a one-week field study session abroad. The course includes a combination of lectures and site visits. (F,SP) Staff
Master’s in Financial Engineering

230A. Fundamentals of Financial Economics. (3) Six hours of lecture for seven and one-half weeks. Formerly Business Administration 230A. The course discusses the basic theories of asset pricing. It begins with the standard discounted cash flow analysis, and goes on to discuss the more advanced techniques involved in developing the arbitrage pricing technique for security valuation. Topics will be fixed income securities, derivatives, contingent claims, basic principles of optimal portfolio theory, models of equity and asset pricing, including CAPM and related Factor Models. (F,SP)

230B. Fundamentals of Corporate Finance. (2) Three to four hours of lecture per week for eight weeks. Formerly Business Administration 230B. This course teaches students to apply a business valuation framework to solve corporate finance problems. Issues related to corporate governance and agency problems are also addressed. (F,SP) Staff

230C. Derivatives: Economic Concepts. (2) Four hours of lecture per week for seven and one-half weeks. Prerequisites: Business Administration 230A-230B. Formerly Business Administration 230C. This course is an introduction to the use and pricing of derivatives. It covers mathematical concepts and numerical methods underlying derivative analysis, the institutional structure of derivative markets, valuation of standard forwards, futures, swaps, and options, and the binomial and Black-Scholes option pricing models and volatility estimation. Programming, modeling, and analysis of derivatives will be covered in-depth. (F,SP)

230D. Derivatives: Quantitative Methods. (2) Four hours of lecture per week for eight weeks. Prerequisites: 230A-230B. Formerly Business Administration 230D. This course emphasizes the pricing of derivatives in continuous time, from the formulation of the pricing problem to the implementation of computational methods and numerical solution techniques. (F,SP) Staff

230E. Empirical Methods in Finance. (2) Four hours of lecture per week for seven and one-half weeks. Prerequisites: Business Administration 230A-230B. Formerly Business Administration 230E. This course reviews probability and statistical techniques commonly used in quantitative finance. It includes a review of normal, lognormal, CEV distribution, estimation and nonparametric techniques commonly used in finance (MCD, VC, etc.). The financial databases and estimation application software are used to estimate volatilities and correlations and their stability. (F,SP)

230F. The Design of Securities for Corporate Financing. (1) Two hours of lecture per week for eight weeks. Prerequisites: Business Administration 230F. Formerly Business Administration 230F. The view of corporate finance presented in this course stems from an analysis of two related issues: 1) how firms create value, and 2) how corporate finance facilitates the process of value creation. As part of this process, we will examine the factors that help determine financial strategy, thereby putting the design of financial packages in perspective. In particular, the course focuses on how corporate financing needs lead to the need for financial engineering and spurious financial innovation. (F,SP) Staff

230G. Equity and Currency Markets. (2) Four hours of lecture for seven and one-half weeks. Prerequisites: Business Administration 230A-230B. Formerly Business Administration 230G. This course provides a framework to allow students the opportunity to estimate volatilities and correlations and their stability. (F,SP)

230H. Financial Risk Measurement and Management. (2) Four hours of lecture for seven and one-half weeks. Prerequisites: Business Administration 230H. This course examines risk measurement and management including market risk, credit risk, liquidity risk, settlement risk, volatility risk, kurtosis risk and other types of financial risks. Topics will include risk management techniques for different types of contracts and portfolios such as options, portfolio beta, factor sensitivities, VAR, dynamic portfolio analysis and extreme value analysis and other risk management techniques. (F,SP)

230I. Fixed Income Markets. (2) Four hours of lecture for seven and one-half weeks. Prerequisites: 230D. Formerly Business Administration 230I. This course provides a quantitative approach for fixed income securities and bond portfolio management. Topics include fixed income security markets, pricing and uses for portfolio management or for hedging interest rate risk, bond mathematics, term structure measurement and theory, immunization techniques, and the modern theory of bond pricing, and derivative instruments. (F,SP)

230J. Success and Failure in Financial Innovation. (1) Two hours of lecture per week for seven and one-half weeks. Prerequisites: Business Administration 230A-230B, Formerly Business Administration 230J. Students will participate in a series of case studies illustrating some of the major successes and failures of and valuing and motivating undertaking stages how to measure success and failure and discuss case studies in portfolio insurance, long-term capital management, mortgage-backed securitization, and corporate enterprise-wide risk control. (F,SP) Staff

230K. Dynamic Asset Management. (2) Four hours of lecture for seven and one-half weeks. Prerequisites: Business Administration 230A-230B. Formerly Business Administration 230K. This course reviews portfolio theory and pricing models. It includes: risk-modelling and portfolio theory, and financial risk models and financial instruments. (SP) Staff

230L. Real Options and Commodity Derivatives. (2) Four hours of lecture for seven and one-half weeks. Prerequisites: Business Administration 230C, 230D, and 230L. Formerly Business Administration 230L. This course covers real option theory. Topics include: the “convenience yield” in commodity futures prices, the value of pure growth firms (firms with no current earnings) the optimal time for a firm to invest or liquidate, and investment and investment decisions. The theoretical asset pricing models that use an option based approach and characteristics of and for markets for commodity derivatives will also be covered. (F,SP)

230M. Asset-Backed Security Markets. (2) Four hours of lecture per week for eight weeks. Prerequisites: Business Administration 230M. Formerly Business Administration 230M. This course extends the study of fixed income securities to advanced topics on mortgage and other asset-backed securities. Topics will include basic mechanics of structuring deals for mortgage-related securities, credit cards, leases, and other debt markets and the risk management techniques employed in the securitization process for these assets. The valuation of pooled assets and derivative bonds using Monte Carlo and option pricing techniques, and trading strategies are also evaluated. (F,SP)

230N. Applied Finance Project. (1-3) Independent study. Credit and grade to be awarded on completion of sequence. Prerequisites: Participation requires prior approval of the supervising faculty. Formerly Business Administration 230N-230O. Students will be required to develop a quantitative finance project that explores a quantitative finance problem that might be met in practice and involves the development or use of quantitative financial technique. (F,SP) Staff

230P. Fundamentals of Accounting. (1) One to two hours of lecture per week for three to four weeks. Formerly Business Administration 230P. The course is designed to acquaint students with the concepts of financial accounting and reporting. Particular emphasis is given to the accounting challenges posed by modern financial instruments and to how accounting principles may influence financial decisions. (F,SP) Staff

230Q. Introduction to Stochastic Calculus. (2) Four hours of lecture per week for eight weeks. Formerly Business Administration 230Q. The course introduces the students to techniques from stochastic analysis employed in mathematical finance. Topics include: stochastic processes, brownian motion, stochastic integration, martingales and Ito’s formula; martingales. (F,SP) Staff

230R. Advanced Computational Finance. (2) Two to four hours of lecture per week for eight weeks. Prerequisites: 230Q. This course builds on the techniques learned in 230Q. Quantitative Methods for Derivative Pricing. The focus is to introduce numerical and computational issues in pricing and calibration. The orientation of the course is hands-on, with heavy use of computational techniques applied to case projects. The primary objective of this course is to prepare students to tackle the latest challenges in quantitative pricing that they are likely to encounter in cutting-edge financial institutions. (F,SP) Staff

230S. Behavioral Finance. (2) Two to four hours of lecture per week for eight weeks. Prerequisites: 230D. This course introduces the decision theories that have contributed to our understanding of financial markets. This course discusses the common biases and heuristics identified by psychologists. Topics will include over-confidence, anchoring and adjustment, fairness, and prospect theory. We will try to gain an understanding of how these biases affect managers, financial institutions. (F,SP)

230T. Introduction to Financial Programming. (1) Two hours of lecture per week for eight weeks for a total of 15 hours. This course provides a review of the C, C++, and VBA programming languages as they apply to financial engineering. Students will receive a basic understanding of object-oriented concepts, relevant VBA, C, and C++ libraries, programming techniques, and proper syntax. Important and relevant math libraries will be emphasized. Students will also use these languages with Microsoft Excel in order to program and solve financial problems in Excel spreadsheets. (SP)

230U. Credit Risk: Economic Concepts. (1) Three hours of lecture for six weeks. Introduction to credit risk modeling and conceptual overview of current technical advances. Covers default, correlation, default risk assessment, credit portfolio analytics, bond valuation, and credit derivative valuation. Preparations are students who are interested in a second course that will focus on models that are not understood in the technical details of modeling but who desire an understanding of how credit risk modeling is used in practice will benefit from taking this course. (F,SP) Staff

230V. Credit Risk: Quantitative Modeling. (1) Three hours of lecture for six weeks. Focuses on the techniques currently used to model credit risk. The course will cover default probabilities, loss given default, correlation, credit portfolio analytics, bond valuation, and credit derivative valuation. Emphasis will be placed on model building, validation, and interpreting model output. Students will be required to do some high-level programming in a package such as MATLAB. Programming exercises will also be part of the project work. (F,SP) Staff

230W. Accounting and Taxation of Derivatives. (1) Two and one-half hours of lecture every other week. This course provides a framework to allow students the opportunity of understanding accounting and taxes related to derivatives and hedging instruments to fulfill the needs of students seeking jobs in the corporate sector and/or seeking securities-structuring assignments in the financial services sector. A basic understanding of financial accounting is required. (F,SP) Staff

238. Individually Supervised Study for Graduate Students. (1-5) Course may be repeated for credit. Prerequisites: Graduate standing. Individually supervised study of subjects not available to students in the

B prefix=language course for business majors
C prefix=course satisfies R & R requirement
H prefix=honors course
R prefix=course satisfies R & R requirement
*Professor of the Graduate School
†Recipient of Distinguished Teaching Award
Ph.D. in Business Administration

219S. Research Seminar in Economic Analysis and Policy. (1-3) May be repeated for credit. One and one-half hours of seminar every other week. Must be taken on a satisfactory/unsatisfactory basis. The research seminar presents new research on economics applied to business management issues. (F,SP)

229A. Doctoral Seminar in Accounting I. (3) Students will receive no credit for 229A after taking 239A. Three hours of seminar per week. Prerequisites: Business Administration 202A or equivalent, and Economics 201A-201B. Formerly Business Administration 223A. A critical evaluation of accounting literature with emphasis on seminar contributions. Topics covered include research methodology in accounting, the private and social value of information. (SP)

229B. Doctoral Seminar in Accounting II. (3) Course may be repeated for credit. Three hours of seminar per week. Prerequisites: Business Administration 202A or equivalent, and Economics 201A-201B. Formerly Business Administration 223B. A critical evaluation of recent accounting literature involving empirical research. (F,SP)

229C. Doctoral Seminar in Accounting III. (3) Three hours of seminar per week. Prerequisites: Business Administration 202A or equivalent, and Economics 201A-201B. Formerly Business Administration 223C. A critical evaluation of recent accounting literature with emphasis on financial accounting. (F)

229D. Doctoral Seminar in Accounting IV. (2) Two hours of seminar per week. Prerequisites: Business Administration 202A or equivalent, and Economics 201A-201B. Formerly Business Administration 223D. A critical evaluation of recent accounting literature with emphasis on financial accounting. (F)

229S. Research Seminar in Accounting. (2-4) Course may be repeated for credit. One-half to three hours of seminar per week. Must be taken on a satisfactory/unsatisfactory basis. Advanced study in the field of Finance. (F,SP)

239A. Research in Micro-Organizational Behavior. (3) Three hours of seminar per week. Prerequisites: Ph.D. student or consent of instructor. Formerly Business Administration 254A. Review of the research literature on micro-organizational behavior, including its social psychological and psychological foundations. Topics include: job design, work attitudes, organizational commitment, organizational control and participation in organizations, creativity, personality, socialization leadership, industrial organization psychology. (SP)

239B. Research in Macro-Organizational Behavior. (3) Three hours of seminar per week. Prerequisites: Ph.D. student or consent of instructor. Formerly Business Administration 254B. Review of the research literature on macro-organizational behavior, including its sociological, political and economic foundations. Topics include: bureaucracy, authority, power and politics, control, technology, institutional theory, organizational ecology, resource dependency and transaction costs. (F)

259C. Research in Industrial Relations and Labor. (3) Three hours of seminar per week. Prerequisites: Ph.D. student or consent of instructor. Formerly Business Administration 254C. Review of the research literature on industrial relations and labor, including its economic and institutional foundations. Topics include: unionism, wages, productivity, turnover, collective bargaining, strikes and arbitration, government regulation, internal labor markets, and implicit contracts. (F)

259D. Special Research Topics in OBIR. (3) Three hours of seminar per week. Prerequisites: Ph.D. student or consent of instructor. Formerly Business Administration 254D. Review of special research topics in organizational behavior and industrial relations not ordinarily covered in 259A, B, or C. Possible topics include: human resource management research; comparative management; and business policy and strategy. Context varies from year to year. (SP)

259S. Research Seminar in Organizational Behavior and Industrial Relations. (2-4) Course may be repeated for credit. One-half to three hours of seminar per week. Must be taken on a satisfactory/unsatisfactory basis. Advanced study in the field of Industrial Relations and Organizational Behavior. (F,SP)

269A. Seminar in Marketing: Buyer Behavior. (3) Three hours of seminar per week. Prerequisites: Consent of instructor. Formerly Business Administration 269A. Advanced topics seminar intended principally for Ph.D. students but open to advanced MBA students. (F,SP)

269B. Seminar in Marketing: Choice Modeling. (3) Three hours of seminar per week. Prerequisites: Consent of instructor. Formerly Business Administration 269B. Advanced topics seminar intended principally for Ph.D. students but open to advanced MBA students. (F,SP)

269C. Seminar in Marketing: Marketing Strategy. (3) Three hours of seminar per week. Prerequisites: Consent of instructor. Formerly Business Administration 269C. Advanced topics seminar intended principally for Ph.D. students but open to advanced MBA students. (F,SP)

279C. Corporate Strategy and Technology. (3) Three hours of seminar per week. Prerequisites: Ph.D. student standing or consent of instructor. Formerly Business Administration 279C. Comprehensive introduction to historical development of contemporary capitalism. Class will (1) compare the “classics” in political economy and their alternative explanations of market, politics, class, and non-economic forms of organization; (2) provide an overview of the history of the United States economic system and business institutions; and (3) examine competing theories of the corporation. (SP)

279C. Economics of Innovation. (3) Three hours of lecture per week. Prerequisites: Ph.D. student or consent of instructor. Formerly Business Administration 279C. Studies recent literature on the economics of innovation and technological change. Topics include: intellectual property rights and property rights; science and technology policy; and the contribution of innovation to economic growth. Methods of analysis are both theoretical and empirical, and economic and case studies. Also listed as Economics C222. (F,SP)

279C. The Political Economy of Capitalism. (3) Three hours of lecture per week. Prerequisites: Ph.D. student or consent of instructor. Formerly Business Administration 279C. Surveys recent literature on public decision-making in government institutions, emphasizing a systematic framework for evaluating questions of public policy formation. Explores the new institutionalism in political science, the methods of rational choice theory to political problems, and links relevant theoretical and empirical literatures in economics and political science. Considerations implications of public choice for corporate strategy and government-business relations. (SP)

279C. Economics of Innovation. (3) Three hours of lecture per week. Prerequisites: Ph.D. student or consent of instructor. Formerly Business Administration 279C. Studies recent literature on the economics of innovation and technological change. Topics include: intellectual property rights and property rights; science and technology policy; and the contribution of innovation to economic growth. Methods of analysis are both theoretical and empirical, and economic and case studies. Also listed as Economics C222. (F,SP)
297S. Research Seminar in Real Estate. (2-4) Course may be repeated for credit. One-half to three hours of seminar per week. Must be taken on a satisfactory/unsatisfactory basis. Advanced study in the field of Business and Public Policy. Topics will vary from year to year and will be announced at the beginning of each semester. (F,SP)

297T. Doctoral Topics in Business Administration. (5-5) Course may be repeated for credit. One-half to three hours of lecture per week. Advanced study in the field of Business Administration. Topics will vary from year to year and will be announced at the beginning of each semester. (F,SP)

299A. Individual Research in Business Problems. (1-12) Course may be repeated for credit. Forty-five hours of work per unit per term. Individual conferences. Must be taken on a satisfactory/unsatisfactory basis. Prerequisites: Ph.D. student standing and consent of instructor. (F,SP)

601. Individual Study for Master’s Students. (1-5) Course does not satisfy unit or residence requirements for master’s degree. Must be taken on a satisfactory/unsatisfactory basis. Prerequisites: Graduate standing. Formerly Business Administration 601. Individual study for the comprehensive requirements in consultation with field adviser. (F,SP)

602. Individual Study for Doctoral Students. (1-6) Course may be repeated for a maximum of 16 units. Course does not satisfy unit or residence requirements for doctoral degree. Must be taken on a satisfactory/unsatisfactory basis. Prerequisites: Graduate standing. Formerly Business Administration 62. Individual study in consultation with the major field adviser, intended to provide an opportunity for qualified students to prepare themselves for the various examinations required for candidates for the Ph.D. degree. (F,SP)

Professional Courses

300. Teaching Business. (2) Six hours of lecture and 24 hours of discussion per term. Must be taken on a satisfactory/unsatisfactory basis. Prerequisites: Ph.D. student. Formerly Business Administration 292B. The course will focus on teaching methods in the natural and social sciences, the humanities, and the arts. It will provide an opportunity for students to prepare themselves for the various examinations required for candidates for the Ph.D. degree. (F,SP)

Celtic Studies

(College of Letters and Science)

Program Office: 6303 Dwinelle Hall, (510) 642-4484
Undergraduate Advising Office: (510) 642-4661
is.berkeley.edu/dept/ceeltic
Director: Eve Sweetser, Ph.D.
Advisory Committee
Thomas Brady (History)
Gary Holland (Linguistics)
Kathryn Klar (Celtic Studies)
Daniel Mela (Rhetoric, Celtic Studies)
Jennifer Miller (English)
Annette Pajouhesh (History, Celtic Studies)
Eve Sweetser (Linguistics)

The Undergraduate Student Affairs Officer is located in 6303 Dwinelle Hall: (510) 642-4661.

Major in Celtic Studies

The program in Celtic studies is designed to give students both a broad understanding of the place of Celtic languages and cultures in the world and a firm grounding in one or more of the Celtic languages. In addition to at least four semesters of language study and the other major requirements, students will be required to organize their studies with reference to one other methodological or disciplinary area chosen from among, but not limited to, a number of Celtic literature, comparative literature, linguistics, history, rhetoric, Scandinavian, or another language and literature. Some students may find it advantageous to declare a minor in one of the language departments that offers it. Students interested in the major should consult the student affairs officer at the Celtic Program’s office in the ISSA Cluster in 6303 Dwinelle Hall.

Major Requirements

Lower Division. Celtic Studies 70 plus two semester courses from the following course selections: 15 and 85, or the equivalent. Students with prior knowledge of a Celtic language may apply for Credit by Examination.

Upper Division. Upper division courses totaling at least 32 units including either 128 or 129, 138 or 139, and 168 or 169. The class from the following list must be taken: 102A, 102B, 105A, 105B, 144A, 144B, 145A, 146A, 146B. Also, 8 units must be included from among the following: 118A, 118B, 119A, 119B, 125, or 126.

Electives: In addition, upper division elective courses may be selected from Celtic Studies 161, 169, 170, 171, and 175, and courses not in fulfillment of major requirements. Scandinavian 123, 160, and 165 may also count toward the major. Courses from the following list may be taken with the approval of the major adviser: Anthropology 180; Art History 160; Comparative Literature 152 and 165; History 150A, 151A, 151B, and 185A; Linguistics 130 or 131.

Minor in Celtic Studies

Students in the College of Letters and Science may complete one or more minors of their choice, normally in a field both academically and administratively distinct from their major. The minor in Celtic studies requires:

Lower Division. Celtic Studies 70.

Upper Division. Five upper division courses chosen from the minor list and approved by the major adviser. All upper division courses applied to the minor must be completed on a letter-graded basis; at least three of the five courses must be completed at Berkeley, and a minimum overall grade-point average of 2.0 is required in the upper division courses applied to the minor.

Students interested in the minor should consult the student affairs officer at the Celtic Program’s office in the ISSA Cluster in 6303 Dwinelle Hall.

Honors Program

In order for students to graduate with honors in Celtic studies, they must have achieved an overall grade point average of 3.0 or higher in all work completed in the University, a minimum 3.5 grade-point average in all courses required for the major, and they must have taken both Celtic Studies 128 and 129 (only one of the two is required for the major). A thesis is also required, which should normally emanate from H195, the Honors Seminar.

Education Abroad

The University offers students the opportunity to study abroad in the Republic of Ireland, England, Scotland, Wales, and Northern Ireland. These programs feature language study along with courses in history, literature, and many other areas within the humanities and social sciences.Courses may be applied toward language and upper division credit in the major or minor with advance approval of the major adviser. Details of the programs are available from Berkeley Programs for Study Abroad, 160 Stephens Hall, (510) 642-1356; www.ias.berkeley.edu/bspa.

Graduate Studies

Although no graduate degrees in Celtic studies are offered at present, it is possible to pursue research in Celtic languages, literature, history, anthropol-
ogy, etc., in a variety of departments. Dissertations on Celtic subjects have been accepted in the departments of Comparative Literature, History, Linguistics, English, German, French, and Anthropology and in the Folklore Program.

Lower Division Courses

R1A-R1B. Voices of the Celtic World. (4-4) Three hours of lecture per week. Prerequisites: R1 or R1A: Entry Level Writing Requirement or equivalent; R1A or equivalent is prerequisite to R1B. Formerly 1A-1B. Reading and composition course based on works of Celtic writers in English and in translations into English of Celtic languages. In addition to training in textual analysis and descriptive and argumentative writing, the courses will discuss the notion of Celtic "voices": distinctive modes of cultural expression chosen by important authors from the Celtic milieu. Readings will be chosen from a variety of modern Irish, Welsh, highland Scots, and Breton writers. R1A satisfies the first half of the Reading and Composition requirement and, R1B satisfies the second half. (F,SP) Staff

15. Elementary Modern Irish. (4) Three hours of language instruction and one hour of laboratory per week. A beginning course in Modern Irish. Students will be learning the basics of Irish grammar, and developing ability to understand, speak, read and write the language. (F,SP) Staff

16. Introduction to Modern Welsh. (4) Three hours of language instruction and one hour of laboratory per week. Introduction to modern Welsh conversation and grammar. Emphasis in the first-semester class is on pronunciation of cultural mutations, using several tenses (present, perfect, imperfect, past), and the acquisition of basic vocabulary and idiom. Simple written materials based on traditional Welsh stories will supplement classroom oral-aural work. (F) Klar, Rejohn

70. The World of the Celts. (4) Three hours of lecture per week. An overview of the history of Celtic-speaking peoples from Indo-European times, including linguistic and archaeological evidence for the existence of the Celtic language group in first millennium B.C. Europe. Celtic religion and comparative Indo-European mythology. Discussion of the validity of classical reports of the Celtic culture. Celtic tribal migrations in the historical period; the foundation of Brittany. The decline and suppression of modern Celtic languages; Celts in the New World. (F,SP) Melia

84. Sophomore Seminar. (1,2) Course may be repeated for credit as topic varies. One hour of seminar per week. Focuses on one topic. Three hours of seminar per week per unit for 10 units. Two hours of seminar per week per unit for eight weeks. Three hours of seminar per week per unit for five weeks. Students will be graded on a pass/fail basis. Sections 3-4 to be graded on a letter basis. Prerequisites: At discretion of instructor. Sophomore seminars are small interactive courses offered by faculty members in departments across the campus. Sophomore seminars offer opportunity for close, regular intellectual contact between faculty members and students in the crucial second year. The topics vary from department to department and semester to semester. Enrollment limited to 15 sophomores. (F,SP) Staff

85. Intermediate Modern Irish. (4) Three hours of language instruction and one hour of laboratory per week. Prerequisites: 15; or 5 and 75. The second semester of Modern Irish. Continuing instruction in speaking, comprehension, reading and writing skills. By the end of this semester, students will have become acquainted with all of the central grammatical constructions of Irish, and will be ready to begin reading accessible literature. (F,SP) Staff

86. Intermediate Modern Welsh. (4) Three hours of language instruction and one hour of laboratory per week. Prerequisites: 16; or 6 and 76 or consent of instructor. Formerly 6B. Continuation of Celtic Studies 16, emphasis on prose composition, grammar, and idiom. Using texts previously learned, students will learn how to ask and answer many types of questions and will learn conjugated prepositions and idiomatic uses of prepositions. Future and conditional tenses and simple relative clauses will be introduced. Level-appropriate written materials will supplement class materials. Students will begin learning Welsh culture as they learn the language. (SP) Klar, Rejohn

98. Directed Group Study. (1-4) Course may be repeated for credit. Hours to be arranged. Must be taken on a pass/not pass basis. Prerequisites: Freshman or sophomore standing. Students will specialize on selected topics not covered by regularly scheduled courses. (F,SP) Staff

99. Supervised Independent Study and Research. (1-4) Course may be repeated for credit. Individual conferences. Must be taken on a pass/not pass basis. Prerequisites: Freshman or sophomore standing. Departmental approval and consent of instructor. (F,SP) Staff

Upper Division Courses

102A. Elementary Breton. (4) Three hours of lecture and one optional hour of laboratory per week. This course will teach students to speak, read, and write modern literary Breton. We will follow the curriculum established by the only good introductory Breton text in English, which I will supplement with exercises and readings from current Breton publications and contemporary literature. Students will have covered most of the grammar of Breton by the end of the course. Sweetser

102B. Advanced Breton. (4) Three hours of lecture and one optional hour of discussion per week. Prerequisites: 102A. Advanced Breton. Continuation of Celtic Studies 102A. This course will teach students to speak, read, and write modern literary Breton. It will follow the curriculum established by the only good Breton text in English, which will be supplemented with exercises and readings from current Breton publications and contemporary literature. Sweetser

105A. Old and Middle Irish. (4) Three hours of lecture and one hour of discussion per week. Prerequisites: 5 and 75 or consent of instructor. A detailed introduction to the orthography, phonology and grammar of Old Irish designed to provide the student with the subsequent capacity to read with comprehension and to translate (with the aid of dictionary or glossary) any edited text in Old Irish or Middle Irish. Staff

105B. Readings in Old and Middle Irish. (4) Course may be repeated for credit. Hours to be arranged. Prerequisites: Successful completion of Celtic Studies 105A or equivalent. Designed to offer students who have already taken the basic grammar course in Old and Middle Irish (105A) further opportunity to work with important texts written in the period A.D. 700-1200 and to refine their knowledge of the language as well as their grasp of the vernacular tradition as a whole. This course will include both prose and poetry, and major genres such as epic, legend, and genealogy. Staff

119B. Welsh and Arthurian Literature of the Middle Ages. (4) Course may be repeated for credit as topic varies. Three hours of lecture and one hour of discussion per week. A selective study of major surviving works of Welsh prose and poetry of the Middle Ages, with special attention to the development of the legendary history of King Arthur in Europe. All work will be read in English, but course will be coordinated with 106A-106B for those who wish to do some of the readings in Welsh. (SP) Staff

125. Irish Literature in Translation. (4) Course may be repeated for credit with consent of instructor. Three hours of lecture per week. Formerly 125A-125B. A selective study of key themes in modern Irish literature. Texts will include novels, short stories, and poetry and will concentrate on translations of works originally written in Irish. All work will be read in English, but the course will be coordinated with 75 or 115A-115B for those who wish to do some of the reading in Irish. (F,SP) Staff

128. Medieval Celtic Culture. (4) Three hours of lecture per week. A study of medieval Celtic culture, its society, laws, religion, history, and the daily life of the Celtic peoples, as they are reflected in a selection of texts ranging from medieval literary works to legal texts and historical chronicles. All works will be read in English translation. Rejohn

129. Aspects of Modern Celtic Cultures and Folklore. Course may be repeated for credit as topic varies. Three hours of lecture per week. A comparative introduction to modern Celtic cultures: principally Irish, Welsh, Scottish Gaelic and Breton. The development of the "creative cultures" and their "national states" from 1500 to the present; an examination of the role of minority cultures and minority languages in larger political cultural entities. Topic will vary, but will include folklore, nationalism and linguistic history from time to time. Staff

138. Irish Literature. (4) Course may be repeated for credit with consent of instructor. Three hours of lecture per week. Gaelic literature 700-1800 (in translation). Study of the prose saga-cycles, satiric, classical lyric poetry, and bards poetry, developing the mythological and traditional background of modern Irish literature. (F,SP) Staff

139. Irish Literature. (4) Course may be repeated for credit with consent of instructor. Three hours of lecture per week. Irish literature 1800 to the present. (F,SP) Staff

144A. Modern Welsh Level 3. (3) Three hours of lecture and three hours of laboratory per week. Prerequisites: 16 and 86 or consent of instructor. This course continues the Celtic Studies 16-86 sequence. Advanced grammatical concepts and vocabulary building (especially idioms) is emphasized. Students read materials such as magazines, newspapers, catalogues, and popular novels. Regular language laboratory attendance is required. (F,SP) Staff

145A. Intermediate Irish Language. (4) Hours of lecture and one hour of laboratory per week. Prerequisites: successful completion of Celtic Studies 105A or equivalent. Designed to offer students who have already taken the basic grammar course in Old and Middle Irish (105A) further opportunity to work with important texts written in the period A.D. 700-1200 and to refine their knowledge of the language as well as their grasp of the vernacular tradition as a whole. This course will include both prose and poetry, and major genres such as epic, legend, and genealogy. Staff

145B. Modern Irish Level Four. (3) Hours of lecture and three hours of laboratory per week. Prerequisites: 145A or consent of instructor. The fourth semester of Modern Irish. Readings in Irish literature will be a major focus of the Independent Study. but will also be accompanied by advanced grammatical instruction and conversational practice. (F,SP) Staff

146A. Welsh Language and Literature. (4) Three hours of lecture per week. Selected works of Welsh prose and poetry are read in Middle Welsh. Grammar instruction and in-class translations accompany lectures on important themes in medieval Welsh literature. (F,SP) Klar, Rejohn

146B. Medieval Welsh Language and Literature. (4) Three hours of lecture per week. Prerequisites: 106A or consent of instructor. A selection of medieval Welsh prose and poetry is read in Middle Welsh. Grammar instruction and in-class translations accompany lectures on key themes in medieval Welsh literature and tradition. (F,SP) Klar, Rejohn

C168. Celtic Mythology and Oral Tradition. (3) Three hours of lecture per week. The course will introduce students to the mythologies of the Celtic and Indo-European worlds, to the historical narratives in which such beliefs are embedded, and to the methodology of investigating ancient and medieval belief systems. Also listed as Religious Studies C109. Staff

170. Topics in Celtic Studies. (4) Course may be repeated for credit as topic varies. Three hours of lecture per week. Prerequisites: Completion of reading and composition 1A-1B or equivalents; consent of instructor. Topics in this course will be offerings on areas of Celtic language and culture which are not covered in other Celtic studies courses. Topics might include (but would not be limited to) the Celtic romantic tradi-
tion, the Celt in films, Celtic art, national politicians in Celtic regions, and current trends in Celtic research. (F,SP) Klar, Staff

171. Celtic Romanticism. (4) Three hours of lecture per week. From the Classical age to the 21st century, Celts have fascinated people. This course explores the different ways in which Celts have been perceived by outsiders, and the ways in which Celts have presented themselves to the world. The recurring themes of heroism, independence, as well as the warrior and druid types, are stressed. The course also explores the ways in which the Romantic idealizations of Celts have been appropriated by native national politicians, like Napoleon, by European imperialist ventures. All readings in English. (F,SP) Klar

H195A-H195B. Honors Course. (3,3) Independent study. Prerequisites: Open only to honors seniors in the group major in Celtic Studies. Course may take one or two semesters at the option of the instructor and student with credit to be awarded upon completion of a successful thesis. Successful completion of the course will normally, but not necessarily, mean the awarding of honors. (F,SP) Staff

198. Directed Group Study. (1-4) Course may be repeated for credit. Group conferences. Must be taken on a passed/not passed basis. Prerequisites: 60 units and in good academic standing. Directed group study on special topics approved by Celtic Studies. (F,SP) Staff

199. Supervised Independent Study and Research. (1-18) Course may be repeated for credit. Individual conferences. Must be taken on a passed/not passed basis. Prerequisites: 60 units and in good academic standing. Directed individual study on special topics approved by Celtic Studies. (F,SP) Staff

Chemical Engineering

(College of Chemistry)

Department Office: 201 Gilman Hall #1462, (510) 642-2231
Undergraduate Majors Office: 420 Latimer Hall #1460, (510) 642-3452
cheme.berkeley.edu
Chair: Jeffrey A. Reimer, Ph.D.

Professors

Nitash P. Balsara, Ph.D. Renosense Polytechnic Institute. Microstructured polymer materials, light and neuron devices

Alexis T. Bell, S.C. Massachusetts Institute of Technology. Heterogeneous catalysis, reaction engineering

Harvey W. Blanch, Ph.D. California Institute of Technology. Biochemical engineering, enzyme technology

Dagib. S. Clark, Ph.D. California Institute of Technology. Biochemical engineering, biological spectroscopy

John J. D. State University of New York. Polymer Chemistry

David B. Graves, Ph.D. University of Minnesota. Plasma processing, gas discharges

Enrique Iglesia, Ph.D. Stanford University. Transport in biological systems and molecular electronics

Jean M.J. Fré;chet, Ph.D. State University of New York. Polymer processing, process analysis

Harvey W. Blanch, Ph.D. California Institute of Technology. Biochemical engineering, cellular bioengineering

Royut. Maboudian, Ph.D. California Institute of Technology. Surface chemistry in microelectronics processes

Susan J. Muller, Ph.D. Massachusetts Institute of Technology. Fluid mechanics, polymer rheology, transport phenomena

John S. Newman, Ph.D. University of California, Berkeley. Electromagnetic engineering, corrosion

Talyon J. Radke, Ph.D. University of California, Berkeley. Surface and colloid chemistry

Jeffrey A. Reimer, Ph.D. California Institute of Technology. Physical chemistry, semiconductor science

Jon. Cairns, (Emeritus), Ph.D. University of California, Berkeley. Electrochemistry, energy conversion, electrocatalysis

Morton M. Denn, (Emeritus), Ph.D. University of Minnesota. Polymer processing, process analysis


Edward A. Silver, (Emeritus), Ph.D. University of California, Berkeley. Computer simulation, transport phenomena

C. Peter du Pre, (Emeritus), S.C. Massachusetts Institute of Technology. Separation processes

Scott Lynn, (Emeritus), Ph.D. California Institute of Technology. Physical chemistry, inorganic chemical processes

David N. Lyon, (Emeritus), Ph.D. University of California, Berkeley. Catalytic chemistry

John M. Prausnitz, (Emeritus), Ph.D., Dr. Ing., Sc.D., (Emeritus). University. Molecular thermodynamics, phase equilibrium

Michael C. Williams, (Emeritus), Ph.D. University of Wisconsin. Rheology, viscoelasticity, polymers, hemodynamics

Associate Professor

Alexander Katz, Ph.D. California Institute of Technology. Development of catalytic imprinted silicas, electronic materials, biological materials

Assistant Professor

Jhih-Wei Chu, Ph.D. Massachusetts Institute of Technology. Theory and design of catalytic systems

David V. Schaffer, Ph.D. Massachusetts Institute of Technology. Biochemical engineering, biological engineering

Rachel Segalman, Ph.D. University of California, Santa Barbara. Chemistry, physics, self-assembly, plastic electronics

Adjunct Professors

Michel Boudart, Ph.D. Princeton University. Heterogeneous catalysis, solid-surface science

Brian L. Masrelia, Ph.D. University of California, Berkeley. Biochemical engineering, pharmaceutical product development

David S. Soane, (Emeritus), Ph.D. University of California, Berkeley. Polymers, microelectrochemistry, rheology, membranes

Stacy I. Zones, (Emeritus), University of California, San Diego. Zetel synthesis catalysis

Lecturers

Arnold L. Grossberg, M.S. University of Michigan. Process engineering

Paul B. Pioffe, Ph.D. University of California, Berkeley. Technical communications

Moshe Sternberg, Ph.D. University of Bucharest, Romania/USA. Technology. Development of human plasma and biotechnology-derived pharmaceuticals, characterization and structure of proteins

Henrik W. Wallman, Ph.D. University of California, Berkeley. Simulation and control processes

Chemical Engineering Major

The College of Chemistry offers a major in chemical engineering leading to the B.S. degree. The program equips the student for professional work in development, design, and operation of chemical processes and of process equipment. Students with high scholastic attainment are well prepared to enter graduate programs. The curriculum is accredited by the Accreditation Board for Engineering and Technology.

The requirements for the B.S. degree are: A total of 120 semester units; Mathematics 1A, 1B, 53, 54; Physics 7A, 7B; Chemistry 4A, 4B, 112A, 120A or 120B; Chemistry 140, 141, 142, 150A, 150B, 154, 157, 160, 162, 185; Engineering 45, 77; Electrical Engineering and Computer Sciences 100; and Biology 1A. Additional technical electives are required to complete either comprehensive, design or the open elective program or one of the focused options within the chemical engineering program. Students must satisfy the Entry-level Writing, the American Chemical Society Undergraduate Interview, and the American Chemical Society Breadth requirements. Nineteen units in English composition, humanities, and social sciences are required to fulfill the breadth requirement. See the Announcement in the College of Chemistry for additional information about the Chemical Engineering Program.

Undergraduate Research. Students are encouraged to take individual undergraduate research in collaboration with one of the faculty during their junior or senior year.

Joint Major Programs with the College of Engineering. Two joint major curricula involving the Colleges of Engineering and Chemistry are offered. These are: (1) Chemical Engineering/Materials Science and Engineering and (2) Chemical Engineering/Nuclear Engineering. These curricula include the core courses in both departments. Details on these curricula can be found in the Announcements of the College of Engineering and the College of Chemistry.

Intercollegiate Transfers. Transfer applicants are expected to complete, at a minimum, courses equivalent to Chemistry 1A-1B, Mathematics 1A-1B, Physics 7A (calculus-based mechanics and wave motion), English R1A, and an additional 14 units of upper division chemical engineering courses as follows: 140, 141, and 150A plus any two courses selected from 142, 150B, 157, 162, 170, 171, 176, C178, and 179. Students who have completed courses other than those listed above that are essentially equivalent to 141 and 150A can substitute other courses from the above list. At least three of the five courses taken for the minor must be taken at Berkeley. All courses taken for the minor must be taken for a letter grade. Students must achieve at least a 2.0 grade-point average in the courses taken for the minor for both of the following: (1) courses taken at Berkeley and (2) courses taken at another institution and accepted by the College of Chemistry as equivalent to courses at Berkeley. For the minor to be awarded, students must submit a notification of completion of the minor at 420 Latimer Hall.

Note: Consult with your college or school for information on rules regarding overlap of courses between majors and minors.

Graduate Programs

Students interested in graduate study are invited to visit the Department’s web site at cheme.berkeley.edu. For graduate or written work in the College of Chemical Engineering, University of California, Berkeley, 201 Gilman Hall #1462, Berkeley, CA 94720-1462.

Lower Division Courses

24. Freshman Seminars. (1) Course may be repeated for credit as topic varies. One hour of seminar per week. Section 1 to be graded on a letter-grade basis. Section 2 to be graded on a passed/not passed basis. The Berkeley Seminar Program has been designed to provide new students with the opportunity to explore an intellectual topic with a faculty member in a small-seminar setting. Berkeley Seminars are offered in all campus departments, and topics vary from department to department and semester to semester. (SP)

84. Sophomore Seminar. (1,2) Course may be repeated for credit as topic varies. One hour of seminar per week per unit for fifteen weeks. One and one half hours of seminar per week per unit for ten weeks. Two hours of seminar per week per unit for eight weeks. Three hours of seminar per week per unit for five weeks. Sections 1-2 to be graded on a passed/not passed basis. Sections 3-4 to be graded on a letter-grade basis. Prerequisites: At discretion of instructor. Sophomore seminars are small interactive courses offered by faculty members in departments all across the campus. Sophomore seminars offer opportunity for close, regular intellectual contact between faculty members and students throughout the year. The topics vary from department to department and semester to semester. Enrollment limited to 15 sophomores. (F,SP)

C96. Introduction to Research and Study in the College of Chemistry. (1) One hour of seminar per week. Course may be taken on a passed/not passed basis. Prerequisites: Freshman standing in Chemistry or Chemical Engineering major or consent of instructor. Chemistry majors enroll in Chemistry C96 and Chemical Engineering majors enroll in C96. Formerly 98. Introduces freshmen to research activities and programs of study in the College of Chemistry. Includes lectures by faculty, an introduction to college library and computer facilities, the opportunity to meet alumni and advanced undergraduates in an informal atmosphere, and discussion of college and campus resources. Also listed as Chemistry C96. (F)
Supervised research on a specific topic. Enrollment is restricted; see the Introduction to Courses and Curricula section of this catalog. One hour of work per week per unit. Must be taken on a passed/not passed basis. Prerequisites: Consent of instructor. Supervised research on a specific topic. (F,SP)

Upper Division Courses

140. Introduction to Chemical Process Analysis. (4) Three hours of lecture and one hour of discussion per week. Prerequisites: 142 or 1B with a grade of C- or better; and Physics 7B (may be taken concurrently). Material and energy balances applied to chemical process systems. Determination of thermodynamic behavior of pure substances and mixtures. Properties of solutions, phase equilibria. Thermodynamic cycles. Chemical equilibria for homogeneous and heterogeneous systems. (F)

141. Chemical Engineering Thermodynamics. (3) Three hours of lecture and one hour of discussion per week. Prerequisites: 140 with grade of C- or higher; Engineering 77, Computer Science 9A or 61A, or an acceptable computer programming transfer course for science or engineering students. Thermodynamic behavior of pure substances and mixtures. Properties of solutions, phase equilibria. Thermodynamic cycles. Chemical equilibria for homogeneous and heterogeneous systems. (F)

142. Chemical Kinetics and Reaction Engineering. (3) Three hours of lecture and one hour of discussion per week. Prerequisites: 141. Analysis and prediction of rates of chemical conversion in flow and nonflow processes involving homogeneous and heterogeneous systems. (SP)

150A. Transport Processes. (4) Three hours of lecture and one hour of discussion per week. Prerequisites: 140 with a grade of C- or higher; Math 54, which may be taken concurrently. Principles of fluid mechanics and heat transfer with application to chemical processes. Laminar and turbulent flow in pipes and around submerged objects. Flow measurement. Heat conduction and convection; heat transfer coefficients. (SP)

150B. Transport and Separation Processes. (4) Three hours of lecture and one hour of discussion per week. Prerequisites: 150A with grade of C- or higher; Engineering 77, Computer Science 9A or 61A, or an acceptable computer programming transfer course for science or engineering students. Principles of mass transfer with application to chemical processes. Diffusion and convection. Simultaneous heat and mass transfer; reaction, removal, Design of staged and continuous separations processes. (F)

154. Chemical Engineering Laboratory. (3) One hour of lecture and eight hours of laboratory per week. Prerequisites: 142, 150B, 185 or demonstration of competence by exam. Experiments in physical measurements, fluid mechanics, heat and mass transfer, kinetics, and separation processes. Emphasis on investigation of basic relationships important in engineering. Experimental design, analysis of results, and preparation of engineering reports are stressed. (F,SP)

157. Transport Processes Laboratory. (3) One hour of lecture and five hours of laboratory per week. Prerequisites: 150A and 150B, may be taken concurrently. Physicochemical properties of materials. Fluid mechanics, heat and mass transfer experiments illustrating principles and applications of transport phenomena in chemical engineering practice. Experiments illustrate the application of chemical engineering principles to modern technological devices such as microelectronics, processing, biotechnology, and materials processing. (F,SP)

160. Chemical Process Design. (3) Three hours of lecture, one hour of discussion, and three hours of computer laboratory per week. Prerequisites: 142; 150B. Chemical process design. Design of integrated chemical processes with emphasis upon economic considerations. (F,SP)

162. Dynamics and Control of Chemical Processes. (4) Three hours of lecture and four hours of laboratory per week. Prerequisites: 150B; Mathematics 53 and 54. Analysis of the dynamic behavior of chemical processes and methods and theory of their control. Emphasis on development of methods currently used on laboratory processes and process simulations. (F,SP)

170. Biochemical Engineering. (3) Student will receive no credit for 170 after taking 170E or 170M. Three hours of lecture per week. Prerequisites: 150B may be taken concurrently. Principles and analysis of process in the biochemical industries. Fermentation and recovery of biochemical products. (F)

170L. Biochemical Engineering Laboratory. (3) Six hours of laboratory and one hour of lecture per week. Prerequisites: 170 and 170M (may be taken concurrently). Introduction to the microorganisms for the cultivation of microorganisms in batch and continuous processes. Enzymatic conversion processes. Recovery of biological products. Also listed as Chemistry C170L. (SP)

171. Transport Phenomena. (3) Three hours of lecture per week. Prerequisites: 150B. Study of momentum, energy, and mass transfer in laminar and turbulent flow. (F)

176. Principles of Electrochemical Processes. (3) Three hours of lecture per week. Prerequisites: 141; 150B. Principles and application of electrochemical equilibria, kinetics, and transport processes. Technics of electrowinning and electrochemical energy conversion. (F)

178. Polymer Science and Technology. (3) Three hours of lecture/laboratory per week. Prerequisites: One semester of organic chemistry and physics recommended; 150A, equivalent fluid mechanics or consent of instructor. Introduction to physical and chemical behavior of organic polymers. Properties of solutions, melts, glasses, elastomers, and crystals. Engineering applications emphasizing processing technology. Evolutionary experiments in polymerization and characterization. Also listed as Chemistry C178. (SP)

179. Process Technology of Solid-State Materials Devices. (3) Three hours of lecture/laboratory per week. Prerequisites: Engineering 45; one course in electronic circuits recommended; senior standing. Chemical processing and properties of solid-state materials. Crystal growth and purification. Thin film technology. Application of chemical processing to the manufacture of semiconductors and solid-state devices. (SP)

185. Technical Communication for Chemical Engineers. (3) Course may be repeated for credit with consent of instructor. Three hours of lecture per week. Prerequisites: 140; Satisfactory completion of UC En- try Level Writing Requirement; satisfaction of Chemi- cal Engineering English composition requirement and satisfactory language skills as judged by instructor. Development of technical writing and oral presentation skills in formats commonly used by chemical engineers. (F,SP)

H194. Research for Advanced Undergraduates. (2-3) Course may be repeated for credit. Individual conferences. Prerequisites: Honors and senior standing; a minimum GPA of 3.4 overall at Berkeley. Original research under direction of one of the members of the staff. (F,SP)

194. Research for Advanced Undergraduates. (2-3) Course may be repeated for credit. Individual conferences. Prerequisites: Honors and senior standing; a minimum GPA of 3.4 overall at Berkeley. Original research under direction of one of the members of the staff. (F,SP)

196. Special Topics. (2-3) Course may be repeated for credit. Individual conferences. Prerequisites: Senior standing and consent of instructor. Special laboratory or computer work. Special topic. (SP)

197. Field Study in Chemical Engineering. (1-4) Course may be repeated for credit. Three hours of field work per week per unit. Must be taken on a passed/not passed basis. Prerequisites: Approval of instructor and consent of instructor. Supervised experience in off-campus organizations relevant to specific aspects and applications of chemical engineering. Written report required at the end of the term. Course does not satisfy unit or residence requirements for the bachelor’s degree. (F,SP) Strauss

198. Directed Group Study for Undergraduates. (1-3) Course may be repeated for credit. One hour of lecture per week per unit. Must be taken on a passed/not passed basis. Prerequisites: Completion of 60 units of undergraduate study and in good academic standing. Supervised research on a specific topic. Enrollment is restricted; see Introduction to Courses and Curricula section of this catalog. In the General (F)

199. Supervised Independent Study and Research. (1-4) Course may be repeated for credit. One to four hours of independent study per week. Must be taken on a passed/not passed basis. (F,SP) Staff

Graduate Courses

199. Directed Independent Study and Research. (1-4) Course may be repeated for credit. Two or four hours of credit per week per unit. (F)

200. Implications and Applications of Synthetic Biology. (3) Course may be repeated for credit as topic varies. Two hours of lecture and one hour of discussion per week. Prerequisites: Consent of instructor. The goals of the course will be to explore strategies for maximizing the economic and societal benefits of synthetic biology and minimizing the risks; create “seedlings” for future research projects in synthetic biology at UC Berkeley; increase multidisciplinary collaborations at UC Berkeley on synthetic biology; and introduce students to a wide perspective of SB projects and innovators as well as policy, legal, and ethical experts. (SP) Arkin, Keasling

230. Mathematical Methods in Chemical Engineer- ing. (3) Three hours of lecture per week. Prerequisites: Math 53 and 54 or equivalent; open to seniors with consent of instructor. Mathematical formulation and solution of problems drawn from the fields of heat and mass transfer, fluid mechanics, thermodynamics, and chemical engineering applications emphasizing engineering problems involving partial differential equations, variational calculus, and Fourier methods. (F)

232. Computational Methods in Chemical Engineer- ing. (3) Three hours of lecture per week. Prerequisites: Math 53 and 54 or equivalent; open to seniors with consent of instructor. Mathematical formulation and solution of problems drawn from the fields of heat and mass transfer, fluid mechanics, thermodynamics, and chemical engineering applications emphasizing engineering problems involving partial differential equations, variational calculus, and Fourier methods. (F)

240. Thermodynamics for Chemical Product and Process Design. (3) Three hours of lecture per week. Prerequisites: Math 53 and 54 or equivalent; open to seniors with consent of instructor. Mathematical formulation and solution of problems drawn from the fields of heat and mass transfer, fluid mechanics, thermodynamics, and chemical engineering applications emphasizing engineering problems involving partial differential equations, variational calculus, and Fourier methods. (F)

241. Molecular Thermodynamics for Phase Equili- brium and Chemical Engineering. (2) Two hours of lecture per week. Prerequisites: 141 or equivalent. Engineering-oriented synthesis of molecular models with statistical and classical thermodynamics. Quantitative representation of vapor-liquid, liquid-liquid, and solid-liquid equilibria. In addition, to phase equilibria for conventional, chemical, and petrochemical industries, attention is given to supercritical extraction, polymers, gels, electrolytes, adsorption, hydrates, and to selected topics in biothermodynamics. (SP)

244. Kinetics and Reaction Engineering. (3) Three hours of lecture per week. Prerequisites: 142 and 230 or equivalent, open to seniors with consent of instructor. Microscopic processes in chemical reactors: kinetics, catalysis. Interaction of mass and heat transfer in chemical processes. Performance of systems with chemical reactors. (F)

245. Catalysis. (3) Three hours of lecture per week. Prerequisites: 244 or Chemistry 223, or consent of instructor. Adsorption and kinetics of surface reactions; catalyst preparation and characterization; poisoning, selectivity, and empirical aspects; surface chemistry, catalytic mechanisms and modern experimental techniques in catalytic research; descriptive experiments of industrial catalytic systems. (SP)
246. Principles of Electrochemical Engineering. (3) Three hours of lecture per week. Prerequisites: Graduate standing or consent of instructor. Electrode processes in galvanic and electrolytic cells. Charge and mass transfer in ionic media. Criteria of scale-up.

248. Applied Surface and Colloid Chemistry. (3) Three hours of lecture per week. Prerequisites: Graduate standing or consent of instructor. Principles of surface and colloid chemistry with current applications; surfactants, wetting, adsorption, colloids, ionic and non-ionic surfactants, associated phenomena, colloid stability, interfacial phenomena, and electrolyte double layers and colloid stability, kinetics of coagulation, and electrokinetics.

249. Biochemical Engineering. (3) Three hours of lecture per week. Prerequisites: 150A-150B; Molecular and Cell Biology 102; Chemistry 112B; or consent of instructor. Application of chemical engineering principles to the processing of biological and biochemical materials. Design of systems for cultivation of microorganisms and for the separation and purification of biological products.

250. Transport Processes. (3) Three hours of lecture per week. Prerequisites: 150A, 150B, and 230, or equivalent. To open to seniors with consent of the instructor. Basic differential equations of mass, heat, and momentum transport for Newtonian and non-Newtonian fluids, exact solutions of Navier-Stokes equations; scaling and singular perturbations; creeping flow; laminar boundary layers; turbulence; hydrodynamic stability. (SP)

C268. Physicochemical Hydrodynamics. (3) Three hours of lecture per week. Prerequisites: A first graduate course in fluid mechanics is recommended. An introduction to the hydrodynamics of capillarity and wetting. Balance laws and short-range forces. Dimensionless numbers, scaling and lubrication approximation. Rayleigh instability. Marangoni effect. The moving contact line. Wetting and short-range forces. The dynamic contact angle. Dewatering. Coating flows. Effect of surfactants and electric fields. Wetting of rough or porous surfaces. Contact angles for evaporating systems. Also listed as Mechanical Engineering C268. (F,SP) Morris

295. Special Topics in Chemical Engineering. Prerequisites: Open to properly qualified graduate students. Current and advanced study in chemical engineering, primarily for advanced graduate students. (F,SP)

295B. Electrochemical, Hydrodynamic, and Interfacial Phenomena. (2) Course may be repeated for credit. Prerequisites: Open to properly qualified graduate students. (F,SP)

295D. Development of Biopharmaceuticals. (2) This course will present the process of taking a discovered biologic active compound and developing a pharmaceutical product for marketing to the public. Students will gain an understanding of product development in a modern biotechnology company. This course focuses on advances in pharmaceutical development, including the recent literature in this area. Topics of interest include flux analysis, recombinant gene expression, metabolomics, proteomics, transcriptomics, physiology, and more. Students will be expected to read and interpret the recent literature. A working knowledge of molecular biology is necessary. (F,SP)

295L. Implications and Applications of Synthetic Biology. (3) Two hours of lecture and one hour of discussion per week. Prerequisites: Consent of instructor. Formerly C290. Explore strategies for maximizing the economic and societal benefits of synthetic biology and minimizing the risks; create “seeds” for future research projects in synthetic biology at UC Berkeley; interdisciplinary collaborations at UC Berkeley on synthetic biology; and introduce students to a wide perspective of SB projects and innovators as well as policy, legal, and ethical experts. Also listed as Bioengineering C230. (SP) Arkia, Kealing

C295M. Topics in Fluid Mechanics. (1,2) Course may be repeated for credit. One hour of seminar per week. Must be taken on a satisfactory/unsatisfactory basis. Prerequisites: Consent of instructor. Lecture on special topics which will be announced at the beginning of each semester that the course is offered. Topics may include transport and mixing, geophysical fluid dynamics, porous media, free surface flows, non-Newtonian fluid mechanics, among other possibilities. Also listed as Environ Sci, Policy, and Management C291, Physics C290I, Mathematics C290C, and Environmental Engineering C290K. Mechanical Engineering C298A, and Bioengineering C290C. (F,SP) Staff

295N. Polymer Physics. (3) Three hours of lecture per week. Prerequisites: 230 and 240. This course, which is based on Gert Ströbl’s book “The Physics of Polymers” addresses the origin of some of the important physical properties of polymer liquids and solids. This includes phase transitions, crystallization, morphology of glassy polymer systems, and mechanical properties, response to mechanical and electric fields, and fracture. When possible, we will develop quantitative molecular models that predict macroscopic behavior. The course will address experimental data obtained by microscopy, light and neutron scattering, rheology, and dielectric relaxation. (SP)

295O. Chemical Engineering Management. (3) Prerequisites: Graduate standing or consent of instructor. Students will participate in solving open-ended technical and business problems facing management in an industrial organization. Emphasis will be on problem synthesis, creative and strategic thinking, and communication skills. Objectives of the course are to provide an understanding of what is expected of a new engineer in industry, (2) of the viewpoint of management, and (3) of the skills needed for success. (SP)

295P. Introduction to New Product Development. (3) Prerequisites: Graduate standing or consent of instructor. This course is part of the product development initiative sponsored by the department of chemical engineering. It focuses on real-life practices and challenges of translating scientific discovery into commercial products. Its scope is limited in most circumstances to situations where there is some knowledge of chemical engineering, chemistry, and related disciplines might prove to be particularly useful. The course primarily uses case studies of real-world new product development situations to simulate real-life technical and challenges that will confront students in the field. We will cover a wide range of topics including basic financial, strategic, and intellectual property concepts for products, services, and processes; effective new product development team, the evolving role of corporate R&D, the new venture company and the ethics of post-launch product management. (F) Alexander

295Q. Advanced Topics in New Product Development. (3) Prerequisites: Graduate standing or consent of instructor. This course is part of the product development initiative sponsored by the department of chemical engineering. The course builds on the previous product development courses and introduces new strategies and best practices for field project management. (SP) Alexander

C295R. Applied Spectroscopy. (3) Three hours of lecture per week. Prerequisites: Graduate standing in engineering, physics, chemistry, or chemical engineering; and consent of instructor. Surveys the basic principles of spectroscopy, vibrational spectroscopy, scanning tunneling microscopy, and mass spectrometry. (F,SP)

296. Special Study for Graduate Students in Chemical Engineering. (1-6) Course may be repeated for credit. Individual conferences. Sections 1-4 and 11-25 to be graded on a satisfactory/unsatisfactory basis; sections 5-10 to be graded on a letter-grade basis. Prerequisites: Consent of instructor. Special and theoretical studies. (F,SP)

298. Seminar in Chemical Engineering. (1) Course may be repeated for credit. Two hours of seminar per week. Prerequisites: Consent of instructor. This course is intended to introduce chemical engineering students to the concepts and techniques involved in the study of chemical processes at surfaces. Special emphasis will be placed on the chemistry of semiconductor surfaces. Topics to be covered include thermodynamics and kinetics of surfaces; crystal and electronic structures of clean surfaces (metals and semiconductors); adsorption and desorption; surface kinetics and dynamics including diffusion; dynamics of growth and etching; surface reaction models; a survey of modern surface analytical techniques including electron diffraction, Auger electron spectroscopy, scanning tunneling spectroscopy, vibrational spectroscopy, scanning tunneling microscopy, and mass spectrometry. (F,SP)

Chemistry (College of) (College of Chemistry)

Office of the Dean: 420 Latimer Hall #1460
Undergraduate Majors Office: 420 Latimer Hall #1460, (510) 642-3452
chemistry.berkeley.edu

Dean: Charles B. Harris, Ph.D.

Associate Dean (Undergraduate Affairs): Herbert L. Strauss, Ph.D.

Assistant Dean (Facilities): Robert G. Bergman, Ph.D.

Assistant Dean (College Relations): Jane L. Schelber, A.B.

The College of Chemistry comprises two departments: the Department of Chemical Engineering and the Department of Chemistry. Both disciplines impact major world problems. Discovering new sources of energy, recovering and utilizing dwindling natural resources, designing new drugs and food supplies, understanding and protecting the environment, and synthesizing new products biochemically all depend centrally upon chemistry and
Chemical engineering. Students entering these fields will spend their careers in the middle of the action on these and other highly important areas of research.

Both departments in the College of Chemistry rank nationally and internationally among the most prominent in their fields and both are renowned for their breadth of activity in a diverse range of sub-disciplines and applications. At the same time, with only two departments, the college is a relatively small and comfortable place in which to work. Faculty members have many demands on their time, but students are able to develop close and satisfying contacts with them while in the college.

The college offers programs leading to the B.S., M.S., and Ph.D. degrees in both chemistry and chemical engineering and the B.S. degree in chemical biology. The B.S. degree in chemistry is intended for students who are primarily interested in careers as professional chemists or wish a thorough grounding in chemistry in preparation for professional or graduate school in chemistry and other disciplines. The B.S. degree in chemical biology is intended for students who are interested in careers in teaching, medicine, pharmaceuticals, bioengineering, and other professions that require a strong background in chemistry. The B.S. degree in chemical engineering is intended for students who wish to specialize in some related field, such as aeronautical and space science, engineering physics, biomedical engineering, materials science and engineering, and environmental engineering.

The requirements for a B.S. degree in the College of Chemistry, with a Chemistry major, are: a total of 120 semester units; Mathematics 1A, 1B, 53, 54; Physics 7A, 7B; Chemistry 4A, 4B, 104A, 104B, 112A, 112B, 120A, 120B, 125, and a choice of 105, 108, 115, or 146. In addition to these specified courses, the B.S. chemistry major consists of 15 units of advanced study in chemistry and related fields, including at least one lecture course in chemistry. Thus, in consultation with the student the instructor may emphasize chemistry in areas of personal interest or to specialize in some related field, such as physics, biology, geology, mathematics, materials science, nuclear chemistry, or to complete a premedical requirement. In addition to these 15 units of advanced scientific courses, a portion of the 15 units of breadth electives (see below) can be used for coherent programs in interdisciplinary areas.

The following requirements must also be satisfied: English-level Writing, American History and Institutions, American Cultures; second-semester foreign language course or equivalent; and a program of 15 units in English composition (English R1A and R1B, equivalent), literature, history, humanities, and social sciences to fulfill the breadth requirement. See the Announcement of the College of Chemistry for additional information about the chemistry program.
Chemical Biology Major

The requirements for a B.S. degree in chemical biology are as follows: A total of 12 unit upper division courses: Mathematics 1A, 1B, 53, 54; Physics 7A, 7B (8A, 8B may be taken in place of 7A, 7B, but 7A, 7B are recommended); Biology 1A and 1AL; Chemistry 4A, 4B, 103, 112A, 112B, 120A, 120B, 135, and a choice of one of the following: Statistics 110C, 111C, 170L, or 182; Molecular and Cell Biology 110L, 110L. In addition to these specified courses, the B.S. chemical biology major consists of 7 units of advanced study in chemistry and related fields, including at least one lecture course in chemistry.

The following requirements must also be satisfied: Entry-Level Writing; American History and Institutions; American Cultures; second-semester foreign language course or equivalent; and a program of courses in English composition (English R1A and R1B or equivalent), humanities, and social sciences to fulfill the breadth requirement. See the Announcement of the College of Chemistry for additional information about the chemical biology program.

Undergraduate Research

Students are encouraged to take individual undergraduates in collaboration with one of the faculty during their junior or senior year.

Intercollegiate Transfers

Transfer applicants are expected to complete, at a minimum, courses equivalent to Chemistry 1A-1B, Mathematics 1A-1B, Physics 7A (calculus-based mechanics and wave motion), English R1A-R1B, and two additional courses toward the major before transfer. In addition, completion of additional chemistry, mathematics, calculus-based physics, and some biology is encouraged. Chemistry and chemical biology majors who transfer without having covered quantitative analysis are required to take a quantitative reasoning course after transfer. Please note that coursework taken before enrollment at Berkeley is not considered in the selection of applicants.

Chemistry Major in the College of Letters and Science (B.A. Degree)


Honors at Graduation

Upper division students may be admitted to the honors program (Chemistry H194) if they have an overall Berkeley grade-point average of at least 3.4. To be eligible to receive honors in chemistry, candidates for the B.A. degree must (1) earn a grade-point average of at least 3.5 in upper division courses in the major and at least 3.3 overall at Berkeley; and (2) complete at least 3 units of Chemistry H194 or another advanced chemistry course approved by the department.

Field Major in Physical Sciences

Students interested in this major should see Physical Science for the description of the major program.

Chemistry Minor in the College of Chemistry

A minor in chemistry will be awarded to students who have successfully completed one year of organic chemistry (3A plus 3AL and 3B plus 3BL or 112A-112B or equivalent), one year of physical chemistry taken at Berkeley (120A-120B or C130 and 130B), and two additional upper division chemistry courses taken at Berkeley (with the exception of courses numbered 190-199). All of the courses taken for the minor must be taken for a letter grade. Students are advised to take at least two 2.0 grade-point average in the courses taken for the minor for each of the following: upper division courses, courses taken at Berkeley, and organic chemistry courses if taken after admission and accepted by the College of Chemistry as equivalent to 3A plus 3AL, 3B plus 3BL, 112A, or 112B. For the minor to be awarded, students must submit a notification of completion of the minor at 420 Latimer Hall.

Note: Consult with your college or school for information on the overlap of courses between majors and minors.

California Teaching Credential

For information concerning the California Teaching Credential, see the Announcement of the School of Education.

Graduate Programs

Students interested in graduate study will find information concerning the graduate program and admissions on the Chemistry Department web site at chem.berkeley.edu/grad_info.

Laboratory Fees

The College of Chemistry charges a laboratory fee for each of the following laboratory courses: Chemistry 1A, 1B, 3AL, 3BL, 4A, 4B, 105, 108, 112A, 112B, 115, 125, and 146.

Lower Division Courses

1A. General Chemistry. (4) Students will receive no credit for 1A after taking 4A. Three hours of lecture and four hours of laboratory per week. (F,SP)

1B. General Chemistry. (4) Students will receive no credit for 1B after taking 4B. Three hours of lecture and four hours of laboratory per week. (F,SP)

2A. Quantitative Analysis. (3) Students must complete 1A, 1B or 3A before taking 2A. Three hours of lecture per week. (F,SP)

2B. Chemical Structure and Reactivity. (3) Students must complete 1A before taking 2B. Three hours of lecture per week. (F,SP)

4A-4B. General Chemistry and Quantitative Analysis. (4,4) Chemistry 4A: students will receive no credit for 4A after taking 1A. Chemistry 4B: students will receive no credit for 4B after taking 1B or 5. Three hours of lecture and four hours of laboratory per week. (F,SP)

Prerequisites: High school chemistry and calculus (may be taken concurrently). High school physics is recommended. 4A-4B is intended for majors in the chemical sciences. This series presents the foundation principles of chemistry, including stoichiometry, ideal and real gases, acid-base and solubility equilibria, oxidation-reduction reactions, thermochemistry, entropy, nuclear chemistry and radioactivity, the atoms and elements, the periodic table, quantum theory, chemical bonding, molecular structure, chemical kinetics, and descriptive chemistry. Examples and applications will be drawn from diverse areas of special interest such as atmospheric, environmental, materials, polymer and medicinal chemistry. The laboratory emphasizes quantitative work. Equivalent to 1A-1B plus 5A as prerequisite for further courses in chemistry. (F,SP)

5. Quantitative Analysis. (3) Course 4B will restrict credit if completed prior to 5. Two hours of lecture and four hours of laboratory per week. Prerequisites: Chemistry 4A (Chemistry 1A may be taken concurrently). Minimum grade of C- required in 1A, 1B or 3A. Acid-base, redox, complex formation equilibria and their applications to volumetric analytical methods. Principles and applications of spectrophotometry, polarimetry, Coulometry, polarography, and ion exchange chromatography. Selected additional topics in instrumental analysis. (SP)

10. Chemical Attractors. (3) For nonscience majors. Three hours of lecture and one hour of discussion per week. The principles of chemistry open to us in the world around us. From the protection of sunscreens and the seductiveness of perfumes to the processes of DNA fingerprinting and art restoration to the formulas of pharmaceuticals, chemistry is a crucial player in improving the quality of our lives. This course will introduce the nonscience major to chemical principles by exploring various "themes" such as perfumes and chemical communication, pesticides and the environment, diet and exercise, drugs and blood chemistry, art restoration, criminology, and plastics. In lieu of traditional problem sets and laboratories common in chemistry courses, students will prepare critiques of science as it is presented in the media, participate in solving a mock crime, and stage debates about the risks and benefits of chemistry. The course will culminate with group projects whereby students pursue a question or "theme" of their own interest. (SP)

24. Freshman Seminar. (1) Course may be repeated for credit as topic varies. Four hours of laboratory per week. Sections 1-2 to be graded on a letter-grade basis. Sections 3-4 to be graded on a pass/No pass basis. The Freshman Seminar Program has been designed to provide new students with the opportunity to explore an intellectual topic with a faculty member in a small seminar setting. Freshman seminars are offered in all campus departments, and topics may vary from department to department each semester to semester. Enrollment limited to 15 freshmen.

49. Supplementary Work in Lower Division Chemistry. (1-4) Course may be repeated for credit. Meetings to be arranged. Students with partial credit in lower division chemistry courses may, with consent of
The basic principles of metal ions and coordination chemistry applied to the study of biological, environmental, and forensic applications. Hands-on laboratory work using modern instrumentation, emphasizing independent projects involving real-life samples and problem solving. (F,SP)

108. Inorganic Syntheses and Reactions. (4) Two hours of lecture and eight hours of laboratory per week. Prerequisites: 4B or 5, 104A with grade of C- or higher; and 104B (may be taken concurrently). The preparation of inorganic compounds using vacuum line, air-and moisture-exclusion, electrochemical, high-pressure, and other synthetic techniques. Kinetic and thermodynamic studies of inorganic compounds. (F,SP)

96. Introduction to Research and Study in the College of Chemistry. (1) One hour of seminar per week. Must be taken on a passed/not passed basis. Prerequisites: Freshman standing in chemistry or chemical engineering major or consent of instructor. Chemistry majors enroll in C96 and chemical engineering majors enroll in Chemical Engineering C96. Formerly 98. Introduces freshmen to research activities and projects by study in the College of Chemistry. Includes lectures by faculty, an introduction to college library and computer facilities, the opportunity to meet alumnae and advanced undergraduates in an informal atmosphere, and tours of college and campus sources. Also listed as Chemical Engineering C96. (F)

98. Supervised Group Study. (1-4) Enrollment is restricted; see the Introduction to Courses and Curricula section of this catalog. One hour of work per week per unit. Must be taken on a passed/not passed basis. Prerequisites: Consent of instructor. Group study of selected topics.

98B. Issues in Chemistry. (1) Course may be repeated for credit as topic varies. One hour of seminar per week. Must be taken on a passed/not passed basis. Prerequisites: A score of 3, 4, or 5 on the Chemistry AP test, or 1A or 4A (may be taken concurrently). This seminar will focus on one or several related issues in society that have a significant bearing on chemistry. Topics will differ from course section to course section and from year to year. Representative examples: atmospheric ozone, nuclear waste, solar energy, water, agrochemicals. Students will search information sources, invite expert specialists to speak, prepare oral and written reports. (F,SP)

98W. Directed Group Study. (1) Course may be repeated for credit. Two hours of lecture and one hour of fieldwork per week. Formerly 98W. For undergraduate and graduate students interested in improving their ability to communicate their scientific knowledge by teaching chemistry in elementary schools. The course will combine theory-based liberal arts teaching methods and learning pedagogy with 10 weeks of supervised teaching experience in a local school classroom. Thus, students will practice communicating scientific knowledge and receiving feedback on how they are doing. Approximately three hours per week, including time spent in school classrooms. (SP)

100. Communicating Chemistry. (2) Course may be repeated for credit. Two hours of lecture and one hour of fieldwork per week. Formerly 100B. For undergraduate and graduate students interested in improving their ability to communicate their scientific knowledge by teaching chemistry in elementary schools. The course will combine theory-based liberal arts teaching methods and learning pedagogy with 10 weeks of supervised teaching experience in a local school classroom. Thus, students will practice communicating scientific knowledge and receiving feedback on how they are doing. Approximately three hours per week, including time spent in school classrooms. (SP)

104A-104B. Advanced Inorganic Chemistry. (3,3) 103 will restrict credit if completed prior to 104A. Three hours of lecture per week. Prerequisites: 1B, 4B, or 3A; 104A is prerequisite to 104B. The chemistry of metals and nonmetals including the application of physical chemical principles. (F,SP)

105. Instrumental Methods in Analytical Chemistry. (2) Two hours of lecture and eight hours of laboratory per week. Prerequisites: 4B or 5, Principles, instrumentation and analytical applications of atomic spectroscopies, mass spectrometry, separations, electrochemistry, instrumental aspects of instrument design and capabilities as well as real-world problem solving with an emphasis on bioanalytical, environmental, and forensic applications. Hands-on laboratory work using modern instrumentation, emphasizing independent projects involving real-life samples and problem solving. (F,SP)

122. Quantum Mechanics and Spectroscopy. (3) Three hours of lecture per week. Prerequisites: 120A. Postulates and methods of quantum mechanics and quantum theory applied to molecular structure and spectra. (F)

125. Physical Chemistry Laboratory. (3) Consent of instructor is needed if taken after C182 or Earth and Planetary Science C182. One hour of lecture and five hours of laboratory per week. Prerequisites: Needs two terms of undergraduate courses in physics, one in general physics, one in mechanical or nuclear physics. (F,SP)

C130. Biophysical Chemistry: Physical Principles and the Molecules of Life. (4) Restricted credit if completed prior to C130 or Molecular and Cell Biology C100A. Three hours of lecture and one hour of discussion per week. Prerequisites: 3A or 112A—112B with grade of C- or higher; 112A—112B must be completed prior to 130B. Consent of instructor is needed if taken after C182 or Earth and Planetary Science C182. Recommended: Thermodynamic and kinetic concepts applied to understanding the chemistry and structure of biomolecules (proteins, DNA, and RNA), Molecular distribution functions, reaction kinetics, non-stabilized ions, ionic equilibria, energy transduction, and motor proteins. Electrochemical potential, membranes, and ion channels. Also listed as Molecular and Cell Biology C100A. (F,SP)

130B. Biophysical Chemistry. (3) Courses 120A and 120B will restrict credit if completed prior to 130A or Molecular and Cell Biology C100A. Three hours of lecture and one hour of discussion per week. Prerequisites: 130A or consent of instructor. The weekly one-hour discussion is for problem solving and the application of C130 to physics and chemistry. Topics include molecular structure, intermolecular forces and interactions, biomolecular spectroscopy, high-resolution structure determinations. (SP)

135. Chemical Biology. (3) Three hours of lecture per week. Prerequisites: 3B or 112B, Biology 1A; or consent of instructor. One-seat course, aimed toward chemistry majors. (F,SP)

143. Nuclear Chemistry. (2) Two hours of lecture per week. Prerequisites: Physics 7B or equivalent, Radioactivity, fission, nuclear models and reactions, nuclear processes in nature. Computer methods will be introduced. (F)

146. Chemical Methods in Nuclear Technology. (3) One and one-half hours of lecture and four and one-half hours of laboratory per week. Prerequisites: 4B or 5; 143 is recommended. Formerly C144. Experimental illustrations of the interrelation between chemical nuclear science and technology; fission processes, chemistry of fission fragments, chemical effects of nuclear transformation; application of radioactivity to study of chemical problems; neutron activation analysis. (SP)

C150. Introduction to Materials Chemistry. (3) Three hours of lecture per week. Prerequisites: 104B or 112A, Mathematics 1A, Biology 1A; 2B or 112B is recommended. The application of basic chemical principles to problems in materials discovery, design, and characterization will be discussed. Topics covered will include electronic, magnetic, and optical properties of biomolecules, and materials with specific focus on the ways in which atomic-level interactions dictate the bulk properties of materials. Also listed as Materials Science and Engineering C150. (SP)

C170L. Biochemical Engineering Laboratory. (3) Three hours of laboratory per week. Prerequisites: Chemical Engineering 170 or 170E (may be taken concurrently) or consent of instructor. Laboratory techniques for the cultivation of mi
Introduction to Time

Special laboratory work for Transition metal-mediated reactions. The topics covered will be chosen from the Principles of Statistics and the basis.

Review of

hours of lecture/laboratory per week. Prerequisites: Consent of instructor. Theory and practice of modern, single-crystal X-ray diffraction. Groups of students determine the crystal and molecular structures of newly synthesized materials from the College of Chemistry. The laboratory work involves the mounting of crystals and initial evaluation by X-ray diffraction film techniques, the collection of infrared data, and structure procedures, and structure analysis and refinement. (SP)

Thermodynamics and Statistical Mechanics. (3)

Three hours of lecture per week. Prerequisites: 120B. A rigorous presentation of classical thermodynamics followed by an introduction to statistical mechanics with real systems. (SP)

Statistical Mechanics. (3)

Three hours of lecture per week. Prerequisites: 220A. Principles of statistical mechanics and applications to complex systems. (F)

Advanced Quantum Mechanics. (3)

Three hours of lecture per week. Prerequisites: 120B and 122 or equivalent. Quantum mechanics problems, matrix mechanics, approximation methods. (F)

Advanced Quantum Mechanics. (3)

Three hours of lecture per week. Prerequisites: 221A. Time dependence, interaction of matter with radiation, scattering theory. Molecular and many-body quantum mechanics. (F)

Chemical Kinetics. (3)

Three hours of lecture per week. Prerequisites: 222A. (May be taken concurrently). Deduction of mechanisms of complex reactions. Collision and transition state theory. Potential energy surfaces. Unimolecular reaction rate theory. Molecular beam scattering studies. (F)

Chemical Dynamics. (3)


Protein Chemistry, Enzymology, and Bio-Catalysis. (3)

Three hours of lecture per week. Prerequisites: Graduate standing or consent of instructor. The topics covered will be the following: protein structure, denaturation, and folding; RNA catalysis; protein-protein and protein-nucleic acid interactions; enzyme kinetics and mechanism; catalytic antibodies; and bioinorganic chemistry in relation to students in chemistry, biochemistry, and molecular and cell biology. Also listed as Molecular and Cell Biology C214. (SP)

Advanced Nuclear Structure and Reactions. (3)

Three hours of lecture per week. Prerequisites: 143 or equivalent and introductory quantum mechanics. Selected topics on nuclear structure and nuclear reactions. (F)

Introduction to Bonding Theory. (1)

Three hours of lecture per week for five weeks. Prerequisites: 200 or 201 or consent of instructor and background in the use of matrices and linear algebra. An introduction to group theory, symmetry, and representations as applied to chemical bonding. (F)

Inorganic Spectroscopy. (1)

Three hours of lecture per week for five weeks. Prerequisites: 250A or consent of instructor. The theory of vibrational analysis and spectroscopy as applied to inorganic compounds. (SP)

Coordination Chemistry I. (1)

Three hours of lecture per week for five weeks. Prerequisites: 251A or consent of instructor. Synthesis, structure analysis, and reactivity patterns in terms of symmetry orbitals. (SP)

Organometallic Chemistry I. (1)

Three hours of lecture per week for five weeks. Prerequisites: 200 or 201 or consent of instructor. An introduction to organometallics, focusing on structure, bonding, and reactivity. (F)

Organometallic Chemistry II. (1)

Three hours of lecture per week for five weeks. Prerequisites: 252A or consent of instructor. Applications of organometallic compounds in synthesis with an emphasis on catalysis. (F)

Materials Chemistry I. (1)

Three hours of lecture per week for five weeks. Prerequisites: 200 or 201, and 250A, or consent of instructor. Introduction to the descriptive crystal chemistry and electronic band structures of extended solids. (SP)

Materials Chemistry II. (1)

Three hours of lecture per week for five weeks. Prerequisites: 253A or consent of instructor. General solid state synthesis and characterization techniques for metals and inorganic solids, with an emphasis on important physical phenomena including optical, electrical, and magnetic properties. (SP)

Materials Chemistry III. (1)

Three hours of lecture per week for five weeks. Prerequisites: 253A or consent of instructor. Introduction to surface catalysis, organic solids, and nanoscience. Thermodynamics and kinetics of solid state diffusion and reaction will be covered. (SP) Somorjai, Yang

Biinorganic Chemistry. (3)

Three hours of lecture per week for five weeks. A survey of the roles of metals in biology, taught as a tutorial involving class presentations. (SP)

Electrochemical Methods. (1)

Three hours of lecture per week for five weeks. The effect of structure and kinetics on the appearance of cyclic voltammograms and the use of cyclic voltammetry to probe the thermodynamics, kinetics, and mechanisms of electrochemical reactions. (F)

Reaction Mechanisms. (2)

Three hours of lecture and in-class discussion and problem solving and one week of computer laboratory. Prerequisites: 200 or 201 or consent of instructor. Formerly 260A-260B. Advanced methods for examining chemical reaction mechanisms. Topics include kinetic isotope effects, behavior of reactive intermediates, chain reactions, concerted reactions, molecular orbital theory and aromaticity, solvent and substituent effects, linear free energy relationships, photochemistry. (F)

Organic Reactions I. (1)

Three hours of lecture per week for five weeks. Prerequisites: 200 or 201 or consent of instructor. Features of the reactions that comprise the vocabulary of synthetic organic chemistry. (F)

Organic Reactions II. (1)

Three hours of lecture per week for five weeks. Prerequisites: 261A or consent of instructor. More reactions that are useful to the practice of synthetic organic chemistry. (F)

Organic Reactions III. (1)

Three hours of lecture per week for five weeks. Prerequisites: 261B or consent of instructor. This course will consider further reactions with an emphasis on mechanistic and organic reactions such as cycloadditions, electrolyclosyses, and sigmatropic rearrangements. (SP)

Metals in Organic Synthesis. (1)

Three hours of lecture per week for five weeks. Prerequisites: 261B or consent of instructor. Transition metal-mediated reactions occupy a central role in asymmetric catalysis and the synthesis of complex molecules. This course will describe the general principles of transition metal
reactivity, coordination chemistry, and stereoselection. This module will also emphasize useful methods for the analysis of these reactions. (SP)

263A. Synthetic Design I. (1) Three hours of lecture per week for five weeks. Prerequisites: 262 or consent of instructor. This course will describe the application of modern reactions to the total synthesis of complex target molecules. Natural products, such as alkaloids, terpenes, or polypropionate, as well as theoretically interesting "non-natural" molecules will be covered. (SP)

263B. Synthetic Design II. (1) Three hours of lecture per week for five weeks. Prerequisites: 263A or consent of instructor. The principles of retrosynthetic analysis will be laid down and the chemistry of protecting groups will be discussed. Special attention will be given to the automated synthesis of biopolymers such as carbohydrates, peptides, and proteins, as well as nucleic acids. (SP)


264B. Properties and Applications of Macromolecules. (1) Three hours of lecture per week for five weeks. Prerequisites: 264A or consent of instructor. Characterization of macromolecules. Structure-property relationships. Specialty polymers and their applications: polymers in therapeutics, biomedical polymers and implants, conducting polymers, polymers in microelectronics and photonics, polymers in separation and molecular recognition, supramolecular chemistry, and self-assembly. (SP)

265. Nuclear Magnetic Resonance Theory and Application. (1) Three hours of lecture per week for five weeks. Prerequisites: 200 or 201 or consent of instructor. The theory behind practical nuclear magnetic resonance spectroscopy and a survey of its applications to chemical research. (SP)

266. Mass Spectrometry. (1) Students will receive no credit for 266 after taking 268. Three hours of lecture per week for five weeks. Prerequisites: 200 or 201 or consent of instructor. Basic mass spectrometric ionization techniques and analyzers as well as simple fragmentation mechanisms for organic molecules; methods for analyzing organic and inorganic samples, along with the opportunity to be trained and checked out on several open-access mass spectrometers; in-depth instruction on the use of mass spectrometry for the analysis of biomolecules such as proteins, peptides, carbohydrates, and nucleic acids. (SP)

267. Organic Specialties. (1) Three hours of lecture per week for five weeks. Prerequisites: Graduate-level understanding of organic synthesis or consent of instructor. A survey course focusing on an area of organic chemistry of importance, such as pharmaceutical chemistry, biomolecular chemistry, natural products chemistry, etc. (SP)

268. Mass Spectrometry. (2) Students will receive 1 unit of credit for 268 after taking 266. Three hours of lecture for ten weeks. Prerequisites: Graduate standing or consent of instructor. Principles, instrumentation, and application in mass spectrometry, including ionization methods, mass analyzers, spectral interpretation, multidimensional methods (GC/MS, HPLC/MS, MS/MS), with emphasis on small organic molecules and biochemical applications (proteins, peptides, nucleic acids, carbohydrates, noncovalent complexes); this will include the opportunity to be trained and checked out on several open-access mass spectrometers. (SP)

270A. Advanced Biophysical Chemistry I. (1) Two hours of lecture for seven and one-half weeks. Prerequisites: 200 or consent of instructor. Underlying principles and applications of methods for biophysical analysis of biological macromolecules. (F)

270B. Advanced Biophysical Chemistry II. (1) Two hours of lecture for seven and one-half weeks. Prerequisites: 270A or consent of instructor. More applications of methods for biophysical analysis of biological macromolecules. (F)

271A. Chemical Biology I—Structure, Synthesis, and Function of Biomolecules. (1) Three hours of lecture per week for five weeks. Prerequisites: 200 or consent of instructor. This course will present the structure of proteins, nucleic acids, and oligosaccharides from the perspective of organic chemistry. Modern methods for the synthesis and characterization of these molecules will also be presented: (SP)

271B. Chemical Biology II: Enzyme Reaction Mechanisms. (1) Three hours of lecture per week for five weeks. Prerequisites: 271A or consent of instructor. The course will focus on the principles of enzyme catalysis and the development of catalytic constructs (reagents) for the general concepts of enzyme catalysis which will be followed by detailed examples that will examine the chemistry behind the reactions and the three-dimensional structures that carry out the transformations. (SP)

271C. Chemical Biology III: Contemporary Topics in Chemical Biology. (1) Three hours of lecture per week for five weeks. Prerequisites: 270A-270B or consent of instructor. Theory and application of X-ray crystallography to biomacromolecules. (SP)

272A. Bio X-Ray I. (1) Three hours of lecture per week for five weeks. Prerequisites: 270A-270B or consent of instructor. Theory and application of X-ray crystallography to biomacromolecules. (SP)

272B. Bio X-Ray II. (1) Three hours of lecture per week for five weeks. Prerequisites: 272A or consent of instructor. More sophisticated aspects of the application of X-ray crystallography to biomacromolecules. (SP)

273A. Bio NMR I. (1) Two hours of lecture for seven and one-half weeks. Prerequisites: 270A-270B or consent of instructor. Fundamentals of multidimensional NMR spectroscopy (including use of the density matrix for analysis of spin response to pulse sequences) and applications of multidimensional NMR in probing structure, interactions, and dynamics of biological molecules will be described. (SP)

273B. Bio NMR II. (2) Two hours of lecture for seven and one-half weeks. Prerequisites: 273A. Triple resonance methods for determination of protein and nucleic acid resonance assignments, and for generation of structural restraints (distances, angles, H-bonds, etc.). Methods for calculating biomolecular structures from NMR data and the quality of such structures will be discussed. (F,SP)

295. Special Topics. (1-3) Course may be repeated for credit. Must be taken on a satisfactory/unsatisfactory basis. Prerequisites: Graduate standing or consent of instructor. Lecture series on topics of current interest. Recent offered topics: Natural products synthesis, molecular dynamics, statistical mechanics, molecular spectroscopy, structural biophysics, organic polymers, block copolymers, and biological chemistry. (F,SP)

296. Seminars for Graduate Students. (1-3) Course may be repeated for credit. Must be taken on a satisfactory/unsatisfactory basis. Prerequisites: Graduate standing or consent of instructor. Graduate seminar courses. (F,SP)

297. Research for Graduate Students. (1-9) Course may be repeated for credit. Must be taken on a satisfactory/unsatisfactory basis. Prerequisites: Graduate standing. The facilities of the laboratory are available at all times to graduate students pursuing original investigations toward an advanced degree at this University. Such work is ordinarily in collaboration with a member of the staff. (F,SP)

602. Individual Study for Doctoral Students. (1-8) Course may be repeated for credit. Must be taken on a satisfactory/unsatisfactory basis. Individual study in consultation with the major field advisor, intended to provide an opportunity for qualified students to prepare themselves for the various examinations required of candidates for the Ph.D. degree. May not be used for unit or residence requirements for the doctoral degree. (F,SP)

Professional Courses

300. Professional Preparation: Supervised Teaching of Chemistry. (2) Course may be repeated for credit. Prerequisites: Graduate standing and appointment as a graduate student instructor. Discussion, curriculum development, class observation, and practice teaching in chemistry. (F,SP)

301A. Undergraduate Lab Instruction. (2) Course may be repeated once for credit. One hour of lecture and four hours of tutorial per week. Must be taken on a passed/not passed basis. Prerequisites: Junior standing or consent of instructor; 1A-1B with grade B- or higher. Tutoring of students in 1A-1B laboratories. Students attend one hour of the regular GSI preparatory meeting and hold one office hour per week to answer questions about laboratory assignments. (F,SP)

301B. Undergraduate Chemistry Instruction. (2) Course may be repeated once for credit. One hour of lecture and five hours of tutoring per week. Must be taken on a passed/not passed basis. Prerequisites: Sophomore standing and consent of instructor; completion of 38 with grade B- or higher. Formerly 301. Tutoring of students in 1A-1B. Students attend a weekly meeting on tutoring methods at the Student Learning Center and attend 1A-1B lectures. (F,SP)

301C. Chemistry 3 Lab Assistant. (2) Course may be repeated once for credit. One hour of preparation meeting, four hours of instruction in the laboratory, and one hour of laboratory experiment preparation. Must be taken on a passed/not passed basis. Prerequisites: Sophomore standing and consent of instructor; completion of 38 with grade B- or higher. Undergraduate organic lab assistants help in the teaching of the 3A-3B laboratories. Each week students attend a laboratory preparation meeting for one hour, assist in the laboratory section for four hours, and help in the development of experiments for one hour. (F,SP)

301T. Undergraduate Preparation for Teaching or Instruction in Teaching. (2) Course may be repeated for a maximum of 8 units. Two or three hours of lecture and one hour of teacher training per week. Prerequisites: Junior standing, overall GPA 3.1, and consent of instructor. (F,SP)

301W. Supervised Instruction of Chemistry Scholars. (2) Course may be repeated for credit. Must be taken on a passed/not passed basis. Prerequisites: Sophomore standing and consent of instructor. Tutoring of students in the College of Chemistry Scholars Program who are enrolled in 1A-1B or 112A-112B. Students attend a weekly meeting with instructors. (F,SP)
Chicano Studies
(College of Letters and Science)

Program Office: 506 Barrows Hall, (510) 643-0796
ethnicstudies.berkeley.edu
Chair: Beatriz Manz, Ph.D.
Professors
Beatriz Manz, Ph.D.
Jose Mejia, Ph.D.
Norma Alarcon (Emerita), Ph.D.
Mario Barrera (Emeritus), Ph.D.
Carlos Muñoz, Jr. (Emeritus), Ph.D.
Associate Professors
Alfred Arteaga, Ph.D.
Ramez Groatgouk, Ph.D.
David Montejano, Ph.D.
Laura del Río, Ph.D.
Alex M. Saragosa, Ph.D.
Margaretta Melville (Emerita), Ph.D.
Assistant Professor
Nelson Maldonado-Torres, Ph.D.

Undergraduate Major Advisor: Ms. Jiménez-Olvera.

Undergraduate Program

The Chicano studies major offers an interdisciplinary curriculum of academic study that critically examines the historical and contemporary experiences of people of Mexican descent in the context of California and its institutions. Moreover, it is the continuous immigration from Mexico, and now Central America, the Chicano studies major curriculum includes the study of particular aspects of Mexican history, culture, and politics as they bear upon the Chicano community, past and present. Emphasis is given in the major to the student developing a broad knowledge of the Chicano experience. The major stresses the analysis of the interrelationships between Chicano and American society. In this connection, the major strives to incorporate various disciplines in its approach, such as political science, sociology, anthropology, history, literary criticism, and art. Through the interdisciplinary nature of our curriculum, the major is aimed at preparing students for incorporation into the world of work and for a wide range of advanced graduate work and/or professional training in various fields.

Major Requirements

Lower Division
Ethnic Studies 10A, 10B; completion of two courses from Chicano Studies 20, 40, 50, or 70.

Upper Division
Ethnic Studies 101A, 101B, and 103; completion of four elective courses from Chicano Studies 101, 110, 130, 135, 141, 142, 143, 145, 148, 149, 150A, 150B, 159, 161, 172, 174, 176, 179, 180, or an approved course from another department; Chicano Studies 197 (4 units total).

Honors Program
The Chicano Studies program offers an option leading to the A.B. degree with honors. Students must have junior standing; a 3.3 University GPA; and a 3.6 GPA in the major. The honors thesis consists of a 6-unit research project. The faculty will establish criteria and grade the project. For more information, see the Chicano Studies advisor in 532 Barrows Hall.

The Minor in Chicano Studies

Requirements. Completion of five courses from Chicano Studies 101, 110, 130, 135, 141, 142, 143, 145, 148, 149, 150A, 150B, 159, 161, 172, 174, 176, 179, 180. Students may also use one approved course from another department or EAP.

Lower Division Courses

6A. Chicano Spanish. (4) Four hours of lecture per week. Designed and systematically structured to develop confidence in the Chicano student's ability to communicate effectively in Spanish through an emphasis on listening, speaking, and reading. Three hours of seminar per week. Sections 1-2 to be graded on a passed/not passed basis. Sections 3-4 to be graded on a letter-grade basis. (SP)

6B. Chicano Spanish. (4) Four hours of lecture per week. Prerequisites: 6A. To expand upon the material and concepts covered in 6A. This course is designed to introduce the Chicano student to representative Spanish authors and to critical analyses of a variety of their writings. (SP) Parra

20. Introduction to Chicano Culture. (3) Three hours of lecture per week. An introduction to the cultural life of Chicanos with its regional differences. Key themes are the symbols and cultural norms created by the historical interaction of Chicano and American society as expressed in literature, art, music, and folklore. Attention will also be given to change and continuity in Chicano cultural norms on the basis of historical events. (F,SP)

24. Freshman Seminar. (1) Course may be repeated for credit as topic varies. One hour of seminar per week. Sections 1-2 to be graded on a letter-grade basis. Sections 3-4 to be graded on a passed/not passed basis. The Freshman Seminar Program has been designed to provide new students with the opportunity to explore an intellectual topic with a faculty member in a small-seminar setting. Freshman seminars are offered in all campus departments, and topics vary from department to department and semester to semester. Enrollment limited to 15 freshmen. (F,SP) Staff

39. Freshman Sophomore Seminar. Course may be repeated for credit as topic varies. Seminar format. Sections 1-2 to be graded on a letter-grade basis. Sections 3-4 to be graded on a passed/not passed basis. Prerequisites: Consent of instructor. Priority given to freshmen and sophomores. Freshman and sophomore seminars offer lower division students the opportunity to explore an intellectual topic with a faculty member and a group of peers in a small-seminar setting. These seminars are offered in all campus departments; topics vary from department to department and from semester to semester.

40. Introduction to Chicano Literature in English. (4) Four hours of lecture per week. The course will introduce students to modem Chicano literature written in English, and will provide necessary background for understanding more specialized courses in the area. (SP) Pérez

50. Introduction to Chicano History. (3) Three hours of lecture per week. A general overview of the Chicano historical experience in the U.S. (F) Saragosa

70. Latino Politics. (3) Three hours of lecture and one hour of discussion per week. A critical analysis of the Latino political experience in the United States. The course examines the historical and contemporary experiences of Latinos as expressed in literature, art, music, and folklore. Attention will also be given to change and continuity in Chicano cultural norms on the basis of historical events. (F,SP)

84. Sophomore Seminar. (1,2) Course may be repeated for credit as topic varies. One hour of seminar per week. Three hours of seminar per week per unit for five weeks. Three hours of seminar per week per unit for five weeks. Sections 1-2 to be graded on a passed/not passed basis. Sections 3-4 to be graded on a letter-grade basis. Prerequisites: At discretion of instructor. Sophomore seminars are small interactive courses offered by Chicano faculty at all UC campuses. Sophomore seminars offer opportunity for close, regular intellectual contact between faculty members and students in the crucial secondary year. The topics vary from department to department and semester to semester. Enrollment limited to 15 sophomores. (F,SP)

97. Field Study in Chicano Studies. (1-3) Course may be repeated for credit. Enrollment is restricted; see the Introduction to Courses and Curricula section of this catalog. Three hours of fieldwork per week per unit. Must be taken on a passed/not passed basis. Prerequisites: Consent of instructor. Open to freshmen and sophomores only. Group study of selected topics which will vary from semester to semester. (F,SP) Staff

98. Supervised Group Study. (1-3) Course may be repeated for credit. Enrollment is restricted; see the Introduction to Courses and Curricula section of this catalog. Three hours of fieldwork per week per unit. Must be taken on a passed/not passed basis. Prerequisites: Consent of instructor. Open to freshmen and sophomores only. Group study of selected topics which will vary from semester to semester. (F,SP) Staff

99. Supervised Independent Study and Research. (1-4) Course may be repeated for credit. Three to twelve hours of tutorial per week. Must be taken on a passed/not passed basis. Prerequisites: Consent of instructor. Individual research by lower division students. Limited to freshmen and sophomores. (F,SP)

Upper Division Courses

101. Paradigms in Chicano Studies. (4) Three hours of lecture per week. Three years of college coursework, and one year of college Spanish, or Chicano Studies 101 or 102, required. Prerequisites: Majors and minors only. A critical assessment of paradigms and intellectual traditions in Chicano Studies. (F,SP)

110. Latina/o Philosophy and Religious Thought. (4) Three hours of lecture per week. For the last 30 years, the themes of identity and liberation have dominated the social ethic and religious thought of subaltern subjectivities in the Americas. The centrality of these ideas respond to the increasing awareness of the oppression to the lives of the history of conquest, colonization, racism, and sexism in the region. In this course, we are going to study the intellectual production of various ethnic groups in the Americas, particularly Latinas and Latinos in the 20th century, in order to clarify the ties between concerns for cultural and religious identity and the articulation of alternative ethical and political visions. (F,SP) Maldonado-Torres

130. Mexican and Chicano Art History. (3) Three hours of lecture per week. Formerly 30. A survey of Mexican and Chicano art from Mesoamerican period to contemporary Chicano art. Special focus on the mural movements and the relationship between artistic production and the development of Chicano symbols and cultural production. (F) Fuentes

133. Chicano Music. (3) Three hours of seminar per week. What is Chicano music? When did it begin? Who are considered Chicano musicians? How has Chicano music changed in relationship to the historical changes in the Chicano community? How has Chicano music helped shape and been shaped by popular music and popular culture? How has Chicano music been a music accommodation and/or resistance? What role have Chicano artists/musicians played as cultural workers? Does Chicano music have a political agenda? How have Chicano artists and recording companies fared in the music industry? These are a few of the questions we will explore in this course. Course goals and objectives will be accomplished through readings, research, guest lectures, performances, film, and listening to Chicano music. Classroom discourse will be the key ingredient to the success of this course. (F,SP)

135. Chicano/Latino Film. (4) Three hours of lecture per week. Prerequisites: Sophomore standing. Analysis of films by and about Latinos in the United States. Features are emphasized, with limited coverage of documentaries. This course serves both as introduction to the Latino experience and to the analysis of narrative film. (F,SP) Staff

141. Chicana Feminist Writers and Discourse. (4) Four hours of lecture per week. Prerequisites: 40. A critical and theoretical analysis of contemporary Chi-
A study of the relationships and parallel basis. An examination of the historical and contemporary relationship between the educational system and the Mexican community in the United States; the history of schooling practices within the Mexican population as a backdrop to an examination of the current educational conditions of the Chicano students; the different historical trends in the education of Chicanos including alternative schools, bilingual education, school segregation, and higher education. (F,SP)

Chicanos, Law, and Criminal Justice. (3) Three hours of lecture per week. Prerequisites: 70 recommended. An examination of the development and function of law, the organization and administration of criminal justice, and their effects in the Chicano community; response to these institutions by Chicanos. (F)

Chicanos and Health Care. (3) Three hours of lecture per week. Prerequisites: 70 recommended. Relationship of the health care delivery system in the U.S. to the Chicano community. To include an examination and understanding of the concept of mental health as defined by Chicanos. Analysis of program alternatives and the Chicano response to health care problems and issues. (F,SP)

Topics in Chicano Studies. (3) Course may be repeated for credit. Three hours of lecture per week. Prerequisites: Consent of instructor. Provides an overview of Chicano/family structures, using historical, Chicano and feminist perspectives for the analysis of familial patterns. Special attention is given to the use of traditional-cultural explanations of household gender relations, extended families, and Chicano communities. (F,SP)

Field Work in Chicano Studies. (1-3) Course may be repeated for credit. Enrollment is restricted; see the Introduction to Courses and Curricula section of this catalog. Individual arrangements. Must be taken on a passed/not passed basis. Prerequisites: Upper division standing; consent of instructor. Supervised independent field experience in the community relevant to specific aspects of Chicano Studies. Regular meetings with faculty sponsor and written reports required. (F,SP)

Directed Group Study. (1-3) Course may be repeated for credit. Individual arrangements. Must be taken on a passed/not passed basis. Prerequisites: Upper division standing; consent of instructor. Directed group study in Chicano Studies for advanced students. Regular meetings with faculty sponsor and written reports required. (F,SP)

Supervised Independent Study and Research. (1-4) Course may be repeated for credit. Enrollment is restricted; see the Introduction to Courses and Curricula section of this catalog. Individual arrangements. Must be taken on a passed/not passed basis. Pre-requisites: Junior standing; consent of instructor. Independent work for advanced students in Chicano Studies. Regular individual meetings with faculty sponsor and written reports required. (F,SP)

City and Regional Planning
(College of Environmental Design)

Department Office: 228 Wurster Hall, (510) 642-3256
dcrp.ced.berkeley.edu

Chair: Robert B. Cervero, Ph.D.

Professors
Nezar AlSayyad, Ph.D. University of California, Berkeley. Architectural design.
Peter Boszormenyi, M.Arch. University of California, Los Angeles. Urban design, public communication
Robert B. Cervero, M.C.P. Georgia Institute of Technology, Ph.D. University of California, Los Angeles. Transportation planning, planning methods
Stephan C. Cohen, Ph.D. London School of Economics. Economic development theory
Elizabeth Deskin, M.S. Massachusetts Institute of Technology. J.D. Boston College. Urban policy, transportation planning
David E. Dowall, M.U.R.P., Ph.D. University of Colorado. Urban economics
Judith E. Innes. Ph.D. Massachusetts Institute of Technology. Social policy analysis
John Landis, M.I.C.P., Ph.D. University of California, Berkeley. Housing, urban economics, public finance
AnnaLee Saxenian, M.C.P. University of California, Berkeley. Economic development, rural development, biotechnology
Michael Southworth, Ph.D., M.C.P. Massachusetts Institute of Technology. Urban design, environmental psychology, city planning
Edward Blakely (Emeritus), Ed.D. University of California, Los Angeles. Local economic development, planning, biotechnology
Manuel Castells (Emeritus), LL.B. Ph.D. University of Paris. Urban sociology
David D. Foley (Emeritus), Ph.D. Washington University. Metropolitan regional development
Peter Hall (Emeritus), Ph.D. Cambridge University. Metropolitan planning
Ira Michael Heyman (Emeritus), LL.B. Yale Law School. Land use planning
Allan B. Jacobs (Emeritus), M.C.P. University of Pennsylvania. Urban design and planning
Richard L. Meier (Emeritus), Ph.D. University of California, Los Angeles. Urban planning
Michael T. Tetz (Emeritus), Ph.D. University of Pennsylvania. Urban economics and housing
Irene Toff (Emeritus), M.R.P. London School of Economics. Urban development; planning; women in planning
Manuel J. Trachtenbarg, Ph.D. Northern University. Transportation policy

Associate Professors
Karen Christensen, Ph.D. University of California, Berkeley. Planning, housing, education, land use
Frederick C. Collignon, Ph.D. Harvard University. F.A.I.C.P. Social policy, services planning
Timothy P. Duane, Ph.D. University of Washington. Environmental planning, energy issues, infrastructure
John D. Ladle, M.R.P. University of Columbia. Geographic information systems, environmental planning, energy issues
Ananya Roy, M.C.P., Ph.D. University of California, Berkeley. Urban studies, international development, comparative housing studies, gender and planning, social science research methods

Assistant Professors
Karen Chang, M.C.P., Ph.D. University of California, Berkeley. Economic development, metropolitan planning, low-wage labor markets, planning methods
Elizabeth MacDonald, M.C.P., Ph.D. University of California, Berkeley. Urban design, public spaces, streets, urban form

Adjunct Professors
Arthur Blaustein, M.A. Columbia University. Public policy, community and economic development
Frederick Ebel, M.C.P., J.D. Hastings College of the Law. Land use, environmental law, development law
Michael Smith-Heimer, M.C.P. University of California, Berkeley. Housing, community, finance, project management

The Profession
City and regional planners seek to make a difference in the future. The profession of city planning began in the 19th century to deal with the problems of fast-growing industrial cities. Since then, city planning has expanded to include social reform, physical planning and urban design, housing and community development, transportation and infrastructure systems, urban and regional economic development, the natural and metropolitan environment, historic preservation, sustainable devel-
oment, geographic information systems, comparative urban development, urban management, and of course, land use planning. Graduates of city planning work in city, metropolitan, and state planning offices; for private, nonprofit, and community developers; for environmental organizations; in consulting firms and research institutions; in professional development agencies; and for many public, private, and non-profit organizations. All are dedicated to using their personal and professional skills and abilities to produce better, more livable, and more equitable communities.

Undergraduate Program

Urban Studies Major. The undergraduate major in urban studies introduces interested students to cities and urban environments as objects of study, analysis, criticism, and planned transformation. The major has a core in urban studies and planning with courses in city planning and environmental design, and an interdisciplinary curriculum in various urban-related social science fields and disciplines.

City and Regional Planning Minor. The Department of City and Regional Planning offers an interdisciplinary minor in city planning that is open to students in all majors. The minor trains students in the study and analysis of urban environments and teaches them about the practices, policies, and politics that constitute the field of urban planning.

Graduate Programs

The Master of City Planning Degree. The two-year Master of City Planning (M.C.P.) program comprises a solid core of knowledge in the field of city and regional planning, including history and theory, planning methods, urban economics, and urban institutions analysis—and an opportunity to specialize in one of six concentration areas (or to create an individual concentration): community development and housing; environmental planning and policy; land use planning; transportation policy and planning; urban design; and urban and regional economic development. M.C.P. students can also combine one or more concentrations with either of two fields: international and comparative urban studies major; and an interdisciplinary curriculum in various urban-related social science fields and disciplines.

The M.C.P. degree requires the completion of 48 units of coursework during four semesters in residence. Unless they already have equivalent work experience, students must also complete a three-month internship. The terminal M.C.P. requirement, undertaken during the second year of study, takes the form of a professional report or a client report. Alternatively, students may elect to write a master’s thesis.

The Department of City and Regional Planning participates in concurrent master’s degree programs with the Departments of Architecture, Landscape Architecture and Environmental Planning, Civil and Environmental Engineering, and Public Health; and with Boalt Hall and Hastings Law Schools, and International and Area Studies.

The Doctor of Philosophy Degree in City and Regional Planning. The Ph.D. program aims to prepare students interested in cities, regions, and planning for careers in teaching, research, and advocacy. The program stresses preparation in research methods, spatial and regional analysis, methods of the policy sciences, development theory, historical processes, and the critical appraisal of alternative courses of urban and metropolitan change.

Each student’s program of study is individually designed with the assistance and support of an advisor, in accordance with the student’s specific intellectual interests and prior preparation. Ph.D. students are required to complete an outside field requirement (in another department) and an inside field requirement in city and regional planning before taking their oral exams and undertaking their dissertation research. The normal time in the program is four to five years.

Lower Division Courses

97. Field Studies in City and Regional Planning. (1-3) Course may be repeated for credit. Three hours of field work per week per unit. Must be taken on a passed/not passed basis. Supervised experiences in the study of off-campus urban planning practice. Specific days and 12-week sections of city planning. Regular individual meetings with faculty sponsor and written report required.

98. Special Group Study. (1-3) Course may be repeated for credit. Enrollment is restricted; see the Introduction to Courses and Curricula section of this catalog. One to three hours of directed group study per week. Must be taken on a passed/not passed basis. Group studies developed to meet specific needs of students.

Upper Division Courses

110. Introduction to City Planning. (4) Three hours of lecture/discussion per week, plus additional fieldwork. Prerequisites: Open to majors in all fields. Survey of city planning as it has evolved in the United States since 1800 in response to physical, social, and economic problems; major concepts and procedures used by city planners and local governments to improve the urban environment. (F,SP) Collignon, Christensen

111. Introduction to Housing: An International Survey. (3) Three hours of lecture/discussion per week. Prerequisites: 110 or Economics 1 or consent of instructor. The concept of housing, housing policy, and housing as a field of urban planning practice. Emphasis on critical International Issues in the Third World and the United States. (SP) AlSayyad

112A. The Idea of Planning. (3) Three hours of lecture/discussion per week. Prerequisites: Open to all majors in all fields. Survey of city planning as it has evolved in the United States since 1800 in response to physical, social, and economic problems; major concepts and procedures used by city planners and local governments to improve the urban environment. (F,SP) Cohen

113A. Economic Analysis for Planning. (3) Three hours of lecture and one hour of discussion per week. Introduction to economic concepts and thinking as used in planning. Micro-economic theory is reviewed and critiqued. (F) Staff

113B. Community and Economic Development. (3) Three hours of lecture/discussion per week. Prerequisites: 113A or equivalent; open to all majors in all fields. Introduction to political, economic and social issues involved in the development of community economic development. Focus on national economic and social policies, role of local community economic development corporations (CDOCs), resolution of conflicts between private-sector profitability and public sector (community) accountability through critical use of the planning process. (SP) Blaustein

114. Introduction to Urban and Regional Transportation Planning. (3) Three hours of lecture/discussion per week. This course is designed to introduce students to the characteristics of urban transportation systems, the methods through which they are planned and analyzed, and the dimensions of key policy issues confronting decision makers. Also listed as Civil and Environmental Engineering 151G. (SP) Staff

115. Urbanization in Developing Countries. (4) Three hours of lecture and one hour of discussion per week. The course covers issues of development and urbanization from the era of colonialism to the era of contemporary globalization. Themes include modernization, urbanization and city/traditional society, urban poverty, new economies, and the role of international institutions and agencies. (F) Roy

116. Urban Planning Process—The Undergraduate Planning Studio. (4) Four hours of lecture/discussion per week. Prerequisites: Open to majors in all fields. Prequisite: Upper division standing/110 or consent of instructor. An intermediate course in the planning process with practicum in using planning techniques. Classes typically work on developing an area or other community plan. Some lectures, extensive field and group work, oral and written presentations of findings. (SP) Staff

118AC. The Urban Community. (4) Three hours of lecture/seminar and one hour discussion per week. This course covers issues of development and urbanization from the era of colonialism to the era of contemporary globalization. Themes include urban social geography, ethnicity, and identity, residential choice behavior, the political economy of neighborhoods, planning for neighborhoods and civic engagement. Instructors emphasize different topics. Class size limits depend on the instructor. This course satisfies the American Cultures requirement. (F,SP) Blaustein

119. Planning for Sustainability. (3) Three hours of lecture/discussion per week. Prerequisites: Open to majors in all fields. This course covers issues of sustainable development and the role of city and regional planning in addressing the needs of citizens with disabilities. Attention will be given to the economics of disability, to the politics of producing change, and to transportation, housing, public facilities, independent living, employment, and income policies, as assessed from the varying perspectives of those with disabilities and the broader society. Collignon

140. Urban Design: City-Building and Place-Making. (3) Three hours of lecture/discussion per week. This course is concerned with the multidisciplinary field of urban design and practice of urban design. It includes a review of historical approaches to urban design and current movements in the field, as well as discussion of the elements of urban form, theories of good city form, scales of urban design, implementation, and challenges and opportunities for the discipline. Learning from cities via fieldwork is an integral part of the course. (F) Macdonald

197. Field Studies. (1-3) Course may be repeated for credit. Enrollment is restricted; see the Introduction to Courses and Curricula section of this catalog. Three hours of field work per week per unit. Must be taken on a passed/not passed basis. Prerequisites: Consent of instructor. Supervised experiences in the study of off-campus urban planning practice. Regular individual meetings with faculty sponsor and a written report are required.

198. Special Group Study. (1-3) Course may be repeated for credit. Enrollment is restricted; see the Introduction to Courses and Curricula section of this catalog. One to three hours of directed group study per week. Course may be taken on a passed/not passed basis. Group studies developed to meet specific needs of students.

199. Special Study for Advanced Undergraduates. (1-4) Course may be repeated for credit. Enrollment is restricted; see the Introduction to Courses and Curricula section of this catalog. Three hours of field work per week per unit. Must be taken on a passed/not passed basis. Prerequisites: Consent of instructor. Regular meetings with faculty overseer. (F,SP) Staff

Graduate Courses

200. History of City Planning. (3) Three hours of lecture/discussion per week. The history of city planning and the city planning profession in the context of urban development. Special focus on North American planning theory and practice since the late 19th century; some comparative and earlier material. (F) Landis
204. Analytic and Research Methods for Planners. Course may be repeated for credit as modules vary. A series of course modules on research strategy and urban planning. Each module will run for all or for a segment of a semester and will cover a cluster of methods. Students may take sequentially two or three modules in one semester.

204A. Methods of Planning Data Analysis. (2,4) Three hours of lecture and one and one-half hours of laboratory per week. An introduction to basic statistical reasoning and statistical techniques to solve planning and policy problems. Course focuses on (I) basic planning techniques for analyzing and presenting secondary data, predicting forecasts, and conducting regional economic analysis (weeks 1-8); (II) inferential statistics and sampling, as applied to planning problems; and (III) basic multivariate techniques such as chi-squared and linear regression and advanced multivariate techniques such as multiple regression (weeks 9-15). For the two-unit option, students may take the first half of the class (weeks 1-8). (F) Chapple, Landis, Cerervo

204B. Research Methods for Planners. (2,4) Three hours of lecture/discussion per week for 10 weeks (2 units). Three-hour laboratory per week for 15 weeks (4 units). Research methods for planning, including problem definition, observation, key informant interviewing, causal modeling, survey design and overall design of research, as well as memorandum writing and presentation skills. Students work in teams with clients on actual research problems and learn professional skills as well as practical ways of conducting usable research. With permission of the instructor, students who wish to complete only half of the assignments for their individual research may take the course for 2 units. (SP) Landis

204C. Introduction to GIS and City Planning. (3) Three hours of lecture/labouratory per week. Introduction to the principles and practical uses of desktop mapping software. This course is intended for graduate students with exposure to using spreadsheets and database programs for urban and natural resource analysis, and who wish to bring GIS knowledge to their own research. Prior GIS or desktop mapping experience not required. (SP) Landis

204D. Multivariate Analysis in Planning. (3) Four hours of lecture/discussion per week for 10 weeks. Prerequisites: 204A or equivalent. Theory and application of advanced statistical methods in planning. Students will learn to use a variety of statistical software on causal modeling of cross-sectional data. Topics include: multiple regression analysis; residual analysis; weighted least squares; non-linear models; path analysis; log-linear models; analysis of variance and covariance; principal components; factor and cluster analysis. Completion of two computer assignments, using several microcomputer statistical packages, is required. (SP) Cerervo

205. Introduction to Planning and Environmental Law. (3) Three hours of lecture/discussion per week. An introduction to the American legal process and legal framework within which public policy and planning problems are addressed. The course stresses legal methodology, the basics of legal research, and the common-law decisional method. Statutory analysis, administrative law, and constitutional interpretation are also covered. Case topics focus on the law of planning, property rights, land use regulation, and access to housing. (SP) Etzel

206. Planning Institutions and Organizations. (3) Three hours of lecture/discussion per week. Prerequisites: Consent of instructor. Duties and role of the physical planning agency in municipal and metropolitan government, legislative definition of planning; relationship of long-range physical plan to urban development agencies; significance of city planning legislation in reorganization of local government. (SP) Christensen

207. Land and Housing Market Economics. (3) Three hours of lecture per week. Covers concepts of urban economics, land use economics, housing economics, alternative land and housing market analysis. (SP) Roy

219. Comparative International Topics in Transportation. (3) Three hours of lecture/discussion per week. Covers comparative planning and policy topics from both developed and developing countries transnational in nature. Builds policy lessons on planning for mobility, accessibility, and sustainability in different political and contextual settings. Case studies are drawn from both developed and developing countries. (SP) Cerervo

220. The Urban and Regional Economy. (3) Three hours of lecture/discussion per week. Prerequisites: 113A or equivalent. Analysis of the urban, metropolitan, and regional economic context, including the use of graphic communication techniques appropriate to city planning and invoking individual effort and that of collaborative student groups in formulation of planning policies and programs for an urban area. Occasional Friday meetings are required. (SP) Macdonald

227. Studies in Regional Growth and Development. (3) Three hours of lecture/discussion per week. Three-credit module to be used as an option in the fourth semester of the major. The course covers regional growth and population distribution issues. It deals with process design, strategies for change and leadership, and ways of building civil society. The learn by doing course involves role play simulations on topics such as environmental management, community and ethnic conflict, transportation, housing development and environmental justice, along with videos and brief lectures. (SP) Innes

228. Research Workshop on Metropolitan Regional Planning. (4) Four hours of study and two hours of lecture/discussion per week. Prerequisites: 220A or 220B. This course, philosophy, methods, and patterns of regional development techniques, input-output analysis, regional accounting, impact analysis, cluster analysis, and qualitative sectoral studies. Includes an optional 1-unit applied mod- ule during the last five weeks of instruction. (F) Chapple

229. Seminar in Regional Development. (3) Course may be repeated for credit. Three hours of lecture/discussion per week. Prerequisites: 220A and consent of instructor. A seminar on the role of physical planners as community activists in Latin America, Asia, and the Middle East, it highlights urbanism and environmental justice, along with change and leadership, and ways of building civil society. This learn by doing course involves role play simulations on topics such as environmental management, community and ethnic conflict, transportation, housing development and environmental justice, along with videos and brief lectures. (SP) Innes

233. Shaping the Public Realm. (5) Students will receive no credit for C233 after taking Landscape Architecture and Environmental Planning 203. Three hours of lecture and six hours of studio per week. Prerequisites: Previous design studios and City Planning 240. This interdisciplinary studio focuses on the public realm of cities and explores opportunities for creating more humane and delightful public places. Problems will be at multiple scales in both existing urban centers and in areas of new growth. Skills in analyzing, designing, and communicating new public spaces will be developed. Studio work will be supplemented with lectures, discussions, and field trips. Visiting professionals will present case studies and will serve on
This course considers the relationship between housing and land markets from the viewpoints of investors, developers, public and private managers, and consumers. It considers the interactions between private action and public regulation with emphasis on case policy, taxation, and government subsidy programs. We will also analyze the links between primary and secondary mortgage markets, securitization, and liquidity. Finally, the links between housing and related markets and transportation and public finance will be explored. Also listed as Public Policy C275. (F, S) Quigley

235. Methods of Project Analysis. (3) Three hours of lecture/discussion per week. Prerequisites: 207 or equivalent. Using case studies, this course acquaints students with the techniques of project feasibility; analysis of project proposals and overall project compatibility assessment. Case studies will be based on a variety of public and private sector developments, in central city and suburb locations. (SP) Landis

238. Development—Design Studio. (4) Two hours of lecture per week and four hours of studio per week. Prerequisites: 235. Studio experience in analysis, policy advising, and project design or general plan preparation for urban communities undergoing development, with a focus on the development and project planning. (F, S) Smith-Heimer

240. Theories of Urban Form and Design. (3) Three hours of lecture/discussion per week. Prerequisites: Consent of instructor. Theories and patterns of urban form throughout history are studied with emphasis on the role of planning and design in shaping cities and the relations between urban form and social, economic, and geographic factors. Using a case study approach, cities are evaluated in terms of various theories and performance dimensions. (SP) Southworth

C240. Theories of Urban Form and Design. (3) Three hours of lecture/discussion per week. Prerequisites: Consent of instructor. Formerly 240. Theories and patterns of urban form throughout history are studied with emphasis on the role of planning and design in shaping cities and the relations between urban form and social, economic, and geographic factors. Using a case study approach, cities are evaluated in terms of various theories and performance dimensions. Also listed as Landscape Architecture C250. (F) Southworth


242. Urban Design Research Seminar. (1) Course may be repeated for credit. Two hours of seminar offered alternate weeks. Prerequisites: Consent of instructor. Formerly C242. Special topics in urban design research directed to the understanding of places that support and enhance the experience of people. Recent research on a variety of issues including the physical transformation of urban places, design theory, the spatial characteristics of urban forms, or the analysis of urban design projects and plans. (SP) Macdonald

246. Field Observation and Diagnosis of Urban Environment. (2) Fours of seminar/discussion and field work per week. Prerequisites: Consent of instructor. Formerly Interdepartmental Studies 246. The environment. The seminars will review the limitations and possibilities of observations for city planning. The field trips, on foot, will look at, measure, record and learn from a variety of urban environments, including physical, social and economic conditions and trends. (SP) Macdonald

248. Advanced Studio: Urban Design/Environmental Planning. (3) Three hours of seminar and five hours of studio per week. Prerequisites: 208 or 240. Advanced problems in urban design and land use, and in environmental planning. Occasional Friday meetings are required. (SP) Bosselman, Macdonald

249. Urban Design in Planning. (3) Three hours of seminar/discussion per week. Prerequisites: Consent of instructor. Formerly Interdepartmental Studies 249. This seminar will focus on urban design in the planning process, the role of environmental surveys, methods of community involvement, problem identification, goal formulation and alternatives generation, environmental analysis and impact assessment. Case studies. (F) Macdonald

250. Introduction to Land Use Planning. (3) Three hours of lecture per week. Prerequisites: Consent of instructor. This course will introduce students to the organization and land use planning as practiced in California. The course will cover the following topics: California statutes, the General Plan, CEQA, specific plans and how to do them, and managing a planning department. (SP) Landis

C251. Environmental Planning and Regulation. (3) Three hours of lecture per week. Formerly 251. This course will examine emerging trends in environmental planning and policy and the basic regulatory framework for environmental planning encountered in the U.S. We will consider institutional and policy breakdown of the framework of California and the United States to other nations and emerging international institutions. The emphasis of the course will be on regulating “residuals” as they affect three media: air, water, and land. Also listed as Landscape Architecture C251. (F) Duane

C250. Introduction to Land Use Planning. (3) Three hours of lecture/discussion per week. An advanced course in implementation of land use and environmental controls. The theory, practice and impacts of zoning, growth management, land banking, development systems, and other land use controls. Objective is to acquaint student with a range of regulatory techniques and the legal, administrative-political equity aspects of their implementation. (F) Etzel

254. Sustainable Communities. (3) Three hours of lecture/discussion per week. Prerequisites: Graduate standing or consent of instructor. Formerly 254. The course examines and explores the concept of sustainable development at the community level. The course has three sections: (1) an introduction to the discourse on sustainable development; (2) an exploration of several leading academic and technical principles into plans, planning, and urban design; and (3) an examination of European attempts to establish metropolitan and urban designs for a more sustainable “green urbanism.” Duane

255. Urban Planning Applications of Geographic Information Systems. (3) Three hours of lecture and three hours of laboratory per week. Prerequisites: Consent of instructor. This course introduces students to the relatively new and rapidly expanding field of Geographic Information Systems (GIS). The course focuses on GIS and its application to both city and regional problems in the San Francisco Bay Area and offers students a toolkit for integrating spatial information into planning projects. The laboratory sessions will mainly employ a vector model to solving problems. Topics include problem identification, data discovery, database design, construction, modeling, and analytical measurement. (SP) Radke

C257. The Process of Environmental Planning. (3) Students will receive no credit for C257 after taking Architecture C261. Three hours of lecture per week. Prerequisites: C251/Urban and Regional Planning C251. A review of the techniques used in environmental planning, and evaluation of alternate means of implementing environmental and political changes. The class will examine and critique a number of well-known environmental planning programs and plans. Lectures and discussion will address current controversies of use of GIS. Prerequisites: Graduate standing. Formerly 262. Description, analysis, and evaluation of urban policies in a variety of social and spatial contexts, with references to state-
Civil and Environmental Engineering

(Engineering of Environment)

Department Office: 760 Davis Hall #1710, (510) 642-3261
www.ce.berkeley.edu
Chair: Gregory L. Fenves, Ph.D.

Professors
Lisa Alvarez-Cohen (Vice Chair, Instruction and The Fred and Cecilia R. Brown Professor of Environmental Engineering), Ph.D. Stanford University. Environmental microbiology, bioremediation, hazardous waste management
Francisco Armero, Ph.D. Stanford University. Mechanics of solids, computational mechanics
David B. Ashton, Ph.D. Stanford University. Risk analysis methods for project management and construction engineering
Abolhassan Astaneh-Asl, Ph.D. University of Michigan. Experimental research, design of steel structures
Robert G. Bea, Ph.D. University of Western Australia. Nares. Offshore and coastal structures, ocean and coastal engineering, risk assessment and management
Jonathan D. Bray, Ph.D. University of California, Berkeley. Earthquake engineering, geotechnical engineering, numerical modeling, geo-environmental engineering
Michael J. Cassidy, Ph.D. University of California, Berkeley. Traffic operations and control, traffic flow theory
Tan K. Choppa (The Horace, Dorothy, and Katherine L. Johnson Professor of Engineering), Ph.D. University of California, Berkeley. Dynamics of structures, earthquake engineering
Carlos Daganzo (The Robert Hororoff Professor of Civil Engineering), Ph.D. University of Michigan. Transportation theory, mathematical programming
Armen D. Der Kiureghian, Ph.D. Stanford University. Structural reliability, reliability analysis
John Dracup, Ph.D. University of California, Berkeley. Hydroclimatology; analysis of large scale water resource systems; analysis of hydrologic and environmental systems; environmental management of water resource systems; surface water hydrology
Gregory L. Fenves (The Byron L. and Elvira E. Poirano Professor of Civil and Environmental Engineering), Ph.D. University of California, Berkeley. Structures, earthquake engineering, computer-aided engineering
Filip C. Filippou (The Roy W. Carlson Professor of Civil Engineering), Ph.D. University of California, Berkeley. Analysis, design of concrete structures
Steven D. Glaser, Ph.D. University of Texas. Rock mechanics, rock acoustics, soil dynamics, system identification, tunneling
Sanjay Govindjee, Ph.D. Stanford University. Theoretical and computational solid mechanics
Mark Hansen, Ph.D. University of California, Berkeley. Air transportation systems, air transport systems, transportation economics
Robert A. Harley, Ph.D. California Institute of Technology. Air quality, environmental control strategies
James A. Hunt (The Lawrence E. Penrose Professor of Civil and Environmental Engineering), Ph.D. University of California, Los Angeles. Transportation technology
Adda Kanafani (The Edward G. and John R. Cahill Professor of Civil Engineering), Ph.D. University of California, Berkeley. Transportation planning, air transport engineering
Samer Makhlouf (The KENEL Professor of Engineering and Director of the Institute of Transportation Studies), Ph.D. Massachusetts Institute of Technology. Transportation systems analysis, transportation infrastructure management, transportation policy
Stephen A. Mahin (The Byron L. and Elvira E. Nishkan Professor of Structural Engineering), Ph.D. University of California, Berkeley. Structural behavior, earthquake engineering
Jack P. Moehle (Director, Pacific Earthquake Engineering Research Center and The Roy W. Carlson Distinguished Professor of Civil Engineering), Ph.D. University of Illinois. Reinforced concrete structures
Paulo J. Murakami (The Roy W. Carlson Distinguished Professor of Civil Engineering, 1987-1989), Ph.D. University of California, Berkeley. Concrete behavior, structural materials
William W. Nazaroff (Chair of the Energy and Resources Group and The Roy W. Carlson Distinguished Professor of Civil Engineering, 1998-2001), Ph.D. California Institute of Technology. Air quality engineering, interaction of fluid mechanics and biology

Supervisors: Consent of instructor, intended to provide an opportunity for qualified students to prepare themselves for the various examinations required of candidates for the Ph.D. degree. Students may take 1-8 units of 205 per semester and 1-4 units per summer session. No student may accumulate more than a total of 16 units of 205. (F,SP)

Professional Courses

300. Supervised Teaching in City and Regional Planning (1-2) Course may be repeated for credit. Regular meeting to be arranged with faculty sponsor. Must be taken on a satisfactory/unsatisfactory basis. Prerequisites: Graduate standing in department and approval as a graduate teaching instructor. Supervised teaching experience in course planning and interpretation, interactive planning, group processes, and emerging models of critical planning theory. (SP) Inres

280. Doctoral Seminar. (3) Course may be repeated for credit. Seminar paper per week. Prerequisites: Consent of instructor. Advanced study in city and regional planning. Specific topics to be announced at the beginning of each semester. (F,SP) Staff

281. Theories of Planning Practice. (3) Three hours of seminar per week. Prerequisites: Graduate standing and 280. Suitable for graduate students in professional programs doing research on planning and policy practice issues. Focuses on theory and practice of planning, with emphasis on the role of different types of knowledge in developing public policies. Alternative and social action; rationales for governmental intervention; Values, choice, and purposive behavior; knowledge and social action; rationales for governmental intervention in self-regulating social systems. Alternative and social action; rationales for governmental intervention; Values, choice, and purposive behavior; knowledge and social action. Must be taken on a satisfactory/unsatisfactory basis. (SP) Inres

282. Planning and Governing. (3) Three hours of lectures/discussion per week. Prerequisites: Consent of instructor. Origins and evolution of the idea of planning. Values, choice, and purposive behavior; knowledge and social action; rationales for governmental intervention in self-regulating social systems. Alternative and social action; rationales for governmental intervention; Values, choice, and purposive behavior; knowledge and social action. Must be taken on a satisfactory/unsatisfactory basis. (F,SP) Inres

290. Topics in City and Metropolitan Planning. (1-3) Course may be repeated for credit. Three hours of lecture and discussion per week. Prerequisites: Consent of instructor. Origins and evolution of the idea of planning. Values, choice, and purposive behavior; knowledge and social action; rationales for governmental intervention in self-regulating social systems. Alternative and social action; rationales for governmental intervention; Values, choice, and purposive behavior; knowledge and social action. Must be taken on a satisfactory/unsatisfactory basis. (F) Inres

295. Individual Study or Research. (1-12) Must be taken with instructor’s consent. Individual study units (295, 297, 299) counted toward the M.C.P. degree. Any combination of 295, 297 courses may be taken for a total of 6 units maximum toward the M.C.P. degree. (F,SP)

297. Supervised Field Study in City and Regional Planning. (1-2) Course may be repeated for credit. Regular meeting to be arranged with faculty sponsor. Must be taken on a satisfactory/unsatisfactory basis. Prerequisites: Graduate standing in department and consent of adviser and sponsor. Supervised experience on a research project in city or regional planning. Two to three hours of independent study per week. Prerequisites: Consent of instructor. Two to three hours of independent study per week. Prerequisites: Consent of instructor. Two to three hours of independent study per week. Prerequisites: Consent of instructor. Any combination of 295, 297 courses may be taken for a total of 6 units maximum toward the M.C.P. degree. A maximum of 3 units of 295 can be used for degree requirements. (F,SP)

299. Individual Study or Research. (1-3) Course may be repeated for credit. One to three hours of independent study per week. Sections A-L to be graded on a letter-grade basis. Sections M-Z to be graded on a satisfactory/unsatisfactory basis. Section C to be graded on an In-Progress basis only. Prerequisites: Consent of instructor. This course is to be announced at the beginning of each semester. No more than 3 units may be taken in one section.

280. Doctoral Seminar. (3) Course may be repeated for credit. Regular meeting to be arranged with faculty sponsor. Prerequisites: Consent of instructor in self-regulating standing. Individual: Major research program; must be worked out with instructor in advance of signing up for credits. Maximum number of individual study units (295, 297, 299) counted toward the M.C.P. degree credits is 9. (F,SP)

602. Individual Study for Doctoral Students. (1-4) Course may be repeated for credit. Individual study in consultation with the major field advisor. Prerequisites: Ph.D. students only. Individual study in consultation with the major field advisor. Prerequisites: Ph.D. students only. Individual study in consultation with the major field advisor.
Civil and Environmental Engineering / 181

Bozidar Stojadinovic, Ph.D. University of California, Berkeley. Steel and composite structures, earthquake engineering

Assistant Professors
Alexandre Bayen, Ph.D. Stanford University. Distributed and large-scale systems, combinatorial optimization, air traffic automation
Fotini Katopodes Chow, Ph.D. Stanford University. Environmental fluid mechanics, computational fluid mechanics, large-eddy simulation, turbulence modeling, atmospheric boundary layer flow, flow over complex terrain, urban dispersion modeling, coupled land-atmosphere models
Kara Nelson, Ph.D. University of California, Davis. Control of water-related pathogens, natural treatment systems for water quality improvement, appropriate technology
Raj Sengupta, Ph.D. University of Michigan. Systems theory, wireless networks, transportation, unmanned air vehicles

Program Overview
The mission of the civil engineering program at Berkeley is to serve as the world’s academic leader in civil and environmental engineering, defining the evolving disciplines and advancing research and scholarly inquiry. The department educates undergraduate and graduate students to be knowledgeable, forward-thinking, and ethical professionals who go on to shape society characterized by leadership and innovation. The faculty values professional and public service, and through research, seeks scientific and technological advancements that address critical societal needs.

Within the context of this broad objective, the B.S. degree program, in addition to providing a solid foundation in scientific and engineering fundamentals along with exposure to humanities and social sciences. This foundation is essential for solving societal problems in the areas of public safety, resource protection, natural hazard mitigation, and the efficient functioning of urban and natural systems within the United States and worldwide.

The four-year undergraduate curriculum leading to the B.S. degree provides an education that is suitable for comprehensive for students who wish to embark on a professional career directly after graduation and keep abreast of new developments in civil engineering practice. The program also serves as a preparation for graduate study in any of the specialized branches of civil and environmental engineering. The B.S. program in civil engineering is accredited by the Engineering Accreditation Commission of the Accreditation Board for Engineering and Technology, 111 Market Place, Suite 1050, Baltimore, MD 21202-4012. (410) 347-7700.

In addition, the department offers a minor in structural engineering, designed particularly for students in the Department of Architecture, but also available to any student who has met the prerequisites and who is enrolled in a non-civil engineering program. For details, contact the Civil and Environmental Engineering Academic Affairs Office, 750 Davis Hall, (510) 643-1713.

Civil and environmental engineering includes the following major areas of professional specialization:

Environmental engineering involves the application of science and technology to manage environmental resources and prevent or limit environmental degradation. Subject areas include water and air quality engineering, hazardous waste management, ecological engineering, hydrology and water resources management, and environmental fluid mechanics.

Geology involves planning, design, and construction on, or with soil and rock, and with protection and enhancement of the environment. It includes the fields of soil mechanics, foundation engineering, geological engineering, rock mechanics, geotechnical geology, groundwater, and geotechnical aspects of earthquake engineering.

Engineering geosciences complements the conventional coverages within geological engineering but adds geophysics, reservoir modeling, and petroleum engineering. Engineering geophysics encompasses a broad range of non-intrusive remote sensing and imaging methods, at scales from microns to kilometers, with broad applications and essentially all major areas of civil engineering.

Structural engineering concerns the analysis and design of all types of structures, including earthquake-resistant design. Some structures, such as bridges, dams, office buildings, power plants, and harbors, are directly within the field of civil engineering. Other structures, such as aircraft, ships, space vehicles, missiles, and radio telescopes, are in related fields.

Structural mechanics parallels structural engineering for the most part, but strengthens the scientific background of the student. The field encompasses the disciplines of applied mathematics and the engineering sciences to examine a wide range of problems in the behavior of structural elements and systems. It involves the mathematical description of material properties.

Structural materials engineering is concerned with the development of construction materials for engineering projects. Primary emphasis is given to the understanding of basic material properties such as mechanical response, microstructure behavior and durability. Structural materials include steel, concrete, aluminum alloys, timber, plastic, and composite materials.

Transportation engineering is concerned with the planning, design, operation, performance, evaluation, maintenance, and rehabilitation of transportation systems and facilities such as highways, railroads, urban transit, air transportation, logistic supply systems and their terminals.

Civil and environmental engineering systems integrate knowledge of place, time, and environment. It builds on tools and techniques for solving complex civil and environmental engineering problems. To understand the interdisciplinary nature and many scales of civil and environmental engineering problems, students take courses in technical tools (e.g., information management, control, modeling) and human dimensions (e.g., economics, public policy, management, city planning); in addition to deepening and expanding their fundamental knowledge base in engineering and sciences as applied to the physical world.

Curriculum for the Bachelor’s Degree
The undergraduate curriculum provides a broad general education in civil engineering. The curriculum requires a total of 120 units. The programs of study are described in detail in the Announcements of the College of Engineering (available without charge from the College of Engineering, University of California, Berkeley; Berkeley, California 94720-1702). Humanities/Social Studies Electives include six courses of at least 3 units each in humanities and social studies selected from an approved list of courses. Two of these must fulfill the College of Engineering Reading and Composition requirement. Refer to www.berkeley.edu/current_students/hsreq.pdf for details or go to 308 McLaughlin Hall for a handout.

Other requirements of the curriculum include:

Lower Division.
Required: Mathematics 1A-1B, 53 and 54, Chemistry 1A, Physics 7A-7B, Engineering 11, 28, 36, and 77, Civil Engineering 60, 70, 92, and 93, and a basic science elective (Physics 7C, 7D, or Chemistry 1B).

Upper Division.
Civil Engineering 100, 130, 192, an engineering science elective (Mechanical Engineering 104, Mechanical Engineering 105, Mechanical Engineering C105B or Engineering 115), four of seven courses in the elective core (Civil Engineering 103, 111, 115, 167, 175, and 191), a design elective (Civil Engineering 112, 122, 123, 153, 177, or 180) and 15 units of technical electives (upper division courses in civil and environmental engineering or other fields of engineering selected from an approved list in consultation with an adviser).

Graduate Study
The Department of Civil and Environmental Engineering is comprised of the following graduate programs: Engineering and Project Management; Environmental Engineering; Structural Engineering, Mechanics, and Materials (SEMM); and Transportation Engineering. Additionally, the Civil and Environmental Systems program is cross-disciplinary and spans the other five programs. Students may pursue the academic degrees of M.S. and Ph.D., and the professional degrees of M.Eng. and D.Eng. The M.S. program normally lasts one year and the M.Eng. program, two years; the doctoral programs require at least two years after the attainment of a master’s degree. Students may include a dissertation or an equivalent design project. The department also offers programs leading to dual degrees in the following areas: (1) M.S. in Engineering and Master of Architecture (SEMM and the Department of Architecture), (2) M.S. in Engineering and Master of City Planning (Transportation and the Department of City and Regional Planning), (3) M.S. in Engineering and Master of Public Policy (Environmental and the School of Public Policy).

For more details, please consult the Announcement of the College of Engineering, or contact the department’s Academic Affairs Office in 750 Davis Hall.

Note: In addition to the courses listed below, the Department of Civil and Environmental Engineering offers the following courses, found in the Engineering section of this catalog: 11, Principles of Environmental Engineering and Science; 36, Environmental Engineering; 36, Environmental Problem Solving Using Computers; 101, Fractals, Chaos, and Complexity Around Us; 240, Fundamentals of Multiphase Flow in Earth Systems; 332, Mathematical and Numerical Methods in Earth Sciences.

Lower Division Courses
11. Engineered Systems and Sustainability. (3) Three hours of lecture and two hours of discussion per week. Prerequisites: Chemistry 1A, Mathematics 1A. Formerly Engineering 11. An introduction to key engineered systems (e.g., energy, water supply, build- ing transportation) and their environmental impacts. Basic principles of environmental science needed to understand natural processes as they are influenced by human activities. Overview of concepts and methods of sustainability analysis and environmental evaluation of engineering approaches to address sustainability. (F,SP)

24. Freshman Seminars. (1) Course may be repeated for credit as topic varies. One hour of seminar per
60. Structure and Properties of Civil Engineering Materials. (S) Students may receive two units of credit for 60 after taking Engineering 45. One unit of a sufficient grade may be removed in Engineering 45 with 60. Two hours of lecture and three hours of laboratory per week. Introduction to structure and properties of civil engineering materials such as asphalt, concrete, steel, timber, and wood. The properties range from elastic, plastic and fracture properties to porosity and thermal and environmental response. Laboratory evaluation of behavior of these materials under a wide range of conditions. (F,SP) Monteiro, Oster tag

70. Engineering Geology. (F,SP) Three hours of lecture and two hours of laboratory per week. One field trip required. Prerequisites: Chemistry 1A (may be taken concurrently). Principles of physical and structural geology, the influence of geological factors on engineering works and the environment. Field trip. (F,SP) Glaser, Stilar

92. Introduction to Civil and Environmental Engineering. (1) One hour of lecture per week. Must be taken on a pass/failed basis. This course is designed to familiarize the entering student with the nature and scope of civil and environmental engineering and its component specialty areas. (F,SP) Staff

93. Engineering Data Analysis. (S) Students will receive no credit for 93 if taken after Fall 1998. Three hours of lecture and three hours of laboratory per week. Prerequisites: Engineering 7. Application of the concepts and methods of probability theory and statistical inference to CEE problems and data. Graphical and numerical analysis of data. Elements of probability theory; random variables and expectation; simulation; statistical inference. Applications to various CEE problems and real data will be demonstrated by use of MATLAB and existing codes. The course also introduces the student to various domains of uncertainty analysis in CEE. (F,SP) Der Kiureghian, Hansen, Madanat, Rubin

98. Supervised Group Study and Research. (1-3) Course may be repeated for credit. Enrollment is restricted, subject to the Introduction to Courses and Curriculum section of this catalog. Must be taken on a pass/failed basis. Prerequisites: Consent of instructor. Supervised group study and research by lower division students. (F,SP)

99. Supervised Independent Study and Research. (1-4) Course may be repeated for credit. Must be taken on a pass/failed basis. Prerequisites: Freshman or sophomore standing and consent of instructor. Minimum grade point average of 3.3 required. Supervised independent study by lower division students. (F,SP)

Upper Division Courses

100. Elementary Fluid Mechanics. (F) Three hours of lecture and one hour of recitation per week, plus individual laboratory experiments. Prerequisites: Engineering 36. Principles of mechanics as applied to the statics and dynamics of incompressible fluids; open channel flow, fluid measurements, forces on submerged objects, objects, pumps, turbines. Individual laboratory experiments conducted by the student. (F,SP) Rubin, Stacey, Chow

101. Fluid Mechanics of Rivers, Streams, and Wetlands. (3) Three hours of lecture per week. Prerequisites: 100 or Mechanical Engineering 106 or consent of instructor. Analysis of steady and unsteady open-channel flow and applications. Examination of mixing and transport in rivers and streams. Effects of channel complexity. Flooding, streamflow, and road routing. Interaction of vegetation and fluid flow. Freshwater systems: transport in rivers, streams, and wetlands. Implications for freshwater ecosystem function. Offered alternate years. (SP) Stacey

103. Introduction to Hydrology. (3) Three hours of lecture per week and two hours of computer laboratory every three weeks. Prerequisites: 100, Engineering 77 or equivalent, or consent of instructor. Course addresses principles and practical aspects of hydrology. Topics in introduction to hydrology include hydrologic cycle, water balance, and water resources. (F,SP) Der Kiureghian, Al- ders, Filippou

104N. Design of Environmental and Water Resource Systems. (3) Three hours of lecture per week. Prerequisites: 100 and Engineering 77 or equivalent. Chemical mechanisms of reactions controlling the fate of pollutants in the subsurface environment. Chemical reactions in subsurface waters. Geochemical pathways of detoxification. Chemical modeling of pollutant geochemistry. Also listed as Environ Sci, Policy, and Management C128. (SP) Sposito

110. Water Chemistry. (3) Three hours of lecture per week. Prerequisites: 111, Engineering 11. The application of principles of inorganic and organic chemistry to solution equilibrium chemistry to aquatic systems, both in the aquatic environment and in water and wastewater treatment processes. (F) Sposito

111. Water Chemistry. (3) Three hours of lecture per week. Prerequisites: 111, Engineering 11. The application of principles of inorganic and organic chemistry to solution equilibrium chemistry to aquatic systems, both in the aquatic environment and in water and wastewater treatment processes. (F) Sposito

112. Structural Engineering. (3) Two hours of lecture and three hours of laboratory per week. Prerequisites: 60 (maybe taken concurrently). Introduction to design and analysis of structural systems. Loads and load placement. Proportioning of structural members in steel, reinforced concrete, and timber. Structural analysis theory. Hand and computer analysis methods, validation of results from computer analysis. Applications, including bridges, building frames, and long-span cable structures. (F,SP) Moehle, Fenves, Stojadinovic

113. Ecological Engineering for Water Quality Improvement. (3) Two hours of lecture and three hours of laboratory per week. Prerequisites: 111 or consent of instructor. Ecological engineering for treating contaminated water using natural processes to improve water quality. Emphasis on combining basic science and engineering approaches to understanding ecological processes through the development of advanced wastewater treatment, ecological engineering, and biofouling control and monitoring of materials, including biofouling control and monitoring of lab and full-scale systems. Application of water quality measurement techniques. (F) Nelson

114. Environmental Geology. (F,SP) Three hours of lecture per week. Prerequisites: 114. Environmental Geology. The scope of modern environmental engineering requires a fundamental knowledge of microbial processes with specific application to water, wastewater and the environmental fate of pollutants. This course will cover basic microbial physiology, biochemistry, metabolism, growth energetics and kinetics, ecology, pathogenicity, and genetics for application to both engineered and natural environmental systems. (F) Alvarez-Cohen

115. Water Chemistry. (3) Three hours of lecture per week. Prerequisites: 111, Engineering 11. The application of principles of inorganic and organic chemistry to solution equilibrium chemistry to aquatic systems, both in the aquatic environment and in water and wastewater treatment processes. (F) Sposito

116. Environmental Aqueous Geochemistry. (3) Three hours of lecture per week. Prerequisites: 111, Engineering 11. Introduction to groundwater hydrology. (F) Staff

117. Climate Change Mitigation. (3) Three hours of lecture per week. Prerequisites: Upper division or graduate standing in engineering or physical science, or consent of instructor. Assessment, evaluation, and implementation of policies and options for responding to the threat of climate change. Overview of climate-change science: sources, sinks, and atmospheric dynamics of greenhouse gases. Current policies for greenhouse gas emissions. Use of energy resources, transport, storage, and transformation technologies. Technological opportunities for improving end-use energy efficiency. Recovery, sequestration, and disposal of greenhouse gases from fossil-fuel combustion. Societal context for implementing engineered responses. (SP) Nazaroff

119. Environmental Engineering. (3) Three hours of lecture per week. Prerequisites: 100 and Engineering 11, or consent of instructor. Quantitative overview of the properties of environmental contaminants and the transport and transformation processes that govern their concentrations in air and water. Fundamental topics include environmental chemical equilibria and kinetics, chemical and transport models, and elementary transport phenomena. Selected applications to issues in water quality engineering, air quality engineering, and hazardous waste management. (F,SP) Alvarez-Cohen, Nazaroff

122. Design of Steel Structures. (3) Two hours of lecture and three hours of laboratory per week. Prerequisites: 120. Behavior and design of structural members and connections using Linear and Resistance Factor Design (LRFD) methods: tension members, compression members, beams and beam-columns; typical shear and moment connections, welded and bolted connections. Behavior and characteristic of structural systems. A term project is assigned to design the steel building structure, including design for resistance to earthquake loadings. Laboratory includes problem-solving sessions and actual testing of steel members. (F,SP) Astaneh, Stojadinovic

123. Design of Reinforced Concrete Structures. (3) Two hours of lecture and three hours of laboratory per week. Prerequisites: 120. Introduction to materials and methods of reinforced concrete construction; behavior and design of reinforced concrete beams and slabs, including considerations of deflections; cracked beam design and anchorage; behavior and design of columns including slenderness effects; design of floor slabs; design...
of lateral load resisting frames and walls for earthquake effects. Laboratory includes experiments and design sessions leading to development of a structural design project in reinforced concrete. (F.SP) Mahin, Mosalam

124. Structural Design in Timber. (3) Three hours of lecture per week. Prerequisites: 120. Characteristics and properties of wood as a structural material; design and detailing of structural elements and entire structures of wood. Topics include allowable stresses, design and detailing of solid sawn and glued beams and columns, nailed and bolted connections, plywood, diaphragms and shear walls. Case studies. (F.SP) Mahin, Filipou

125. Structural Dynamics and Earthquake Engineering. (3) Three hours of lecture per week. prerequisites: 122 or 123 (may be taken concurrently) and 121. Theory and application of structural dynamics for single and multiple-degree-of-freedom models of buildings subjected to earthquake ground motion. Characteristics of earthquake ground motion and design spectra. Concepts of overall seismic design of buildings, load paths, and proportioning and ductile detailing of members to achieve satisfactory seismic response. (SP) Chopra, Mahin

130. Mechanics of Materials I. (3) Three hours of lecture per week. Prerequisites: 60 or Engineering 45 and Engineering Mechanics I. Introduction to the mechanics of deformable solids; elastic and ultimate resistance of materials; stress and deformation analysis for bars, shafts, beams, and columns; combined stresses; energy methods; statically indeterminate systems; elastic instability; and creep. Computer methods and tools for engineering and management research and practice. Programming in SQL. Programming using standard productivity software. The course is a combination of lectures, readings, hands-on exercises, homework assignments, and a project. The project is an opportunity for students to design and implement a database application suitable to their own interests. (SP) Horvath, Tommelein

153. Transportation Facility Design. (3) Two hours of lecture and three hours of laboratory per week. Prerequisites: Sophomore standing in engineering or consent of instructor. Operation, management, control, design, and evaluation of passenger and freight transportation systems. Their economic role. Demand analysis. Overall logistical structure. Performance models and modeling techniques: time-space diagrams, queuing theory, network analysis, and simulation. Design of control strategies for simple systems. Feedback effects. Paradoxes. Transportation impact modeling; noise, air pollution. Multi-criteria evaluation and decision methods. (SP) Cassidy, Daganza, Hansen, Kanafani, Madanat

165. Concrete Materials and Construction. (3) Three hours of lecture per week. Prerequisites: 60. Consideration of the broad aspects of use of concrete in construction; technical requirements; selection of concrete materials and concrete construction methods used for buildings, highways, airfields, bridges, dams and other hydraulic structures. Laboratory demonstration on concrete testing and evaluation methods, field trip to construction sites. Group and individual projects on concrete construction. (SP) Monteiro

166. Construction Engineering. (3) Two hours of lecture and three hours of laboratory or fieldtrip per week. Prerequisites: Upper division standing; 167 recommended. Introduction to construction engineering and field operations. The construction industry, construction methods and practice, productivity improvement, equipment selection, site layout formwork, erection of steel and concrete structures. Lab. Demolition and simulation. Field trips to local construction projects. (F.SP) Horvath

167. Engineering Project Management. (3) Students will receive 2 units of credit for 167 after taking Engineering 120. Three hours of lecture per week. Prerequisites: Upper division standing. Principles of economics, decision making, and law applied to company and project management. Business ownership, liability and insurance, cash flow analysis, and financial management. Project life-cycle, design-construction interface, contracts, estimating, scheduling, cost control. (F.SP) Ibbas, Tommelein

169A. Web-Based Systems for Engineering and Management. (1) Three hours of lecture per week. Prerequisites: Junior or senior standing; 169A recommended. A series of course modules on computer methods and tools for engineering and management, emphasizing the systems approach. Each 1-unit module will run for a segment of the semester, covering theory and hands-on laboratory exercises. Students may take 1-3 modules per semester. Web design, use, and programming in engineering and management research and practice. Combination of lectures, readings, hands-on exercises, homework assignments, and a project. The project is an opportunity for students to develop a web-based application suitable to their own interests. (SP) Horvath, Tommelein

169B. Database Systems for Engineering and Management. (3) Three hours of lecture and three hours of laboratory per week. Prerequisites: Junior or senior standing; 169A recommended before taking 169B or 169C. A series of course modules on computer methods and tools for engineering and management, emphasizing the systems approach. Each 1-unit module will run for a segment of the semester, and will cover theory and hands-on laboratory exercises. Students may take 1-3 modules per semester. Theory, design, and applications of databases and database management systems in engineering and management research and practice. Programming using standard productivity software. The course is a combination of lectures, readings, hands-on exercises, homework assignments, and a project. The project is an opportunity for students to design and implement a database application suitable to their own interests. (SP) Horvath, Tommelein

169C. Visualization and Simulation for Engineering and Management. (1) One and one-half hours of lecture for ten weeks. Prerequisites: Junior, senior, or graduate standing; 169B or 169C. A series of course modules on computer methods and tools for engineering and management, emphasizing the systems approach. Each 1-unit module will run for a segment of the semester, and will cover theory and hands-on laboratory exercises. Students may take 1-3 modules per semester. Representation and modeling, visualization, use of different graphic formats, and simulation in engineering and management research and practice. The course is a combination of lectures, readings, hands-on exercises, homework assignments, and a project. The project is an opportunity for students to develop a web-based application suitable to their own interests. (SP) Horvath, Tommelein

170. Energy, Ecosystems, and Humans. (3) Three hours of lecture per week. Prerequisites: Chemistry 1A, Mathematics 1A, Physics 7A. Knowledge of thermodynamics and materials, or equivalent. This is an introductory course in physical geology and upper atmospheres, focusing on the role of transportation systems in engineering and management research and practice. Programming in SQL. Programming using standard productivity software. The course is a combination of lectures, readings, hands-on exercises, homework assignments, and a project. The project is an opportunity for students to develop a web-based application suitable to their own interests. (SP) Horvath, Tommelein

171. Introduction to Geological Engineering. (3) Three hours of lecture per week. Prerequisites: 70 or an introductory course in physical geography and upper atmospheres, or equivalent. Geophysical exploration for engineering and management research and practice. The course is an introduction to geological engineering, focusing on the role of transportation systems in engineering and management research and practice. Programming in SQL. Programming using standard productivity software. The course is a combination of lectures, readings, hands-on exercises, homework assignments, and a project. The project is an opportunity for students to develop a web-based application suitable to their own interests. (SP) Pozek

172. Introduction to Rock Mechanics. (3) Students will receive no credit for C172 or Material Science C172 taken prior to Fall 2001. Three hours of lecture/demonstrations per week. Prerequisites: Upper division standing in engineering or science. Formerly C172 and Material Science C172. Introduction to analysis of stress and strain and its application to fracture and deformation in rocks of all kinds. Applications in mining and civil engineering involving design of underground openings and tunnels, structural design of competent, layered, and plastic rocks, slopes cut in jointed rock, and foundations on weak or fractured rocks. (F.SP) Glaser

173. Groundwater and Seepage. (3) Three hours of lecture and one hour of discussion/laboratory per week. Prerequisites: Upper division standing in engineering or science. 100 recommended. Introduction to principles of groundwater flow, including steady and transient flow through porous media, numerical analysis, pumping tests, groundwater geology, contaminant transport, and design of waste containment systems. (F.SP) Rubin, Stier

175. Geotechnical and Geoenvironmental Engineering. (3) Two hours of lecture and three hours of discussion/laboratory per week. Prerequisites: 70, 100, 130; 109 (one of which may be taken concurrently). Soil formation and identification. Engineering properties of soils. Fundamental aspects of soils, including soil mineralogy, soil-water move-
176. Waste Containment Systems. (3) Three hours of lecture per week. Prerequisites: 111 and 175 are recommended. Optimization and decision-making concerning the recovery and characterization of wastes, fate, and transportation of contaminants in soil; soil-water-contaminant interactions; engineering soil properties; use of earth and geotechnical materials in waste containment applications; principles, design, and construction of linear and leachate collection systems; application to landfill design. (SP) Pestana

177. Foundation Engineering Design. (3) Three hours of lecture per week. Prerequisites: 120 and 175 or consent of instructor. Principles of foundation engineering. Shear strength of soil. Theories related to design of retaining structures, shallow foundations, deep foundations, and slope stability. The course has a design project that addresses each of the major topic areas in the course. (F) Bray, Sitar

C178. Applied Geophysics. (3) Two hours of lecture and three hours of laboratory/field experience per week. Prerequisites: Mathematics 53, 54, Physics 7A, 7B, and an introductory course in geology. Formerly Engineering C145, 145L, Earth and Planetary Sciences C145, 145L, and Materials Science and Engineering C145, 145L. The theory and practice of geophysical methods for determining the subsurface distribution of physical rock and soil properties. Measurements of gravity and electrical and electromagnetic fields, and seismic velocity are interpreted to map the subsurface distribution of density, magnetic susceptibility, electrical conductivity, and mechanical properties. Also listed as Earth and Planetary Science C178. (F) Rector

180. Design, Construction, Maintenance of Civil and Environmental Engineered Systems. (4) Three hours of lecture and one hour of discussion per week. This course includes segments on engineering leadership and management, teamwork and team development, characterization and analyses of engineered systems, the engineering Standard of Care, evaluation of constraints and trade-offs in engineering, life-cycle engineering (design through decommissioning), development of factors of safety, and strategies for management of human and organizational factors. Students form teams to address real-life projects selected by the teams that extend beyond the scope of the course. Topics that will be covered in the course include teamwork, their backgrounds, and experience. (SP) Bea

191. Civil and Environmental Engineering Systems Analysis. (3) Two hours of lecture and three hours of computer laboratory per week. Prerequisites: 93. Engineering 77. Formerly 152. This course is organized around five real-world large-scale CEE systems problems. The problems provide the motivation for the study of practical tools that are used for planning or designing these systems. The problems include design of a transportation system for an urban area, resource allocation for the maintenance of a water supply system, development of repair and replacement policies for reinforced concrete bridge decks, transportation modeling for an arterial street, and scheduling in a large-scale construction project. (F) Bayen, Madanat, Sengupta

192. The Art and Science of Civil and Environmental Engineering Practice. (1) One hour of lecture per week. Prerequisites: Senior standing in civil and environmental engineering and one of the following: 180, 191. Distinguished professionals designed to provide an appreciation of the role of science, technology, and the needs of society in conceiving projects, balancing the interests of conflicting demands, and utilizing a variety of disciplines to produce unified and efficient systems. (SP) Staff

193. Engineering Risk Analysis. (3) Three hours of lecture per week. Prerequisites: Upper division standing. Applications of probability theory and statistics in planning, analysis, and design of civil engineering systems. Development of probabilistic models for risk and reliability evaluation. Occurrence models; extreme value statistical methods; Bayesian statistical decision theory and its application in engineering decision-making. (F) Der Kiureghian

198. Directed Group Study for Advanced Undergraduates. (1-4) Course may be repeated for credit. Enrollment is restricted; see the Introduction to Engineering 105. Must be taken on a passed/not passed basis. Prerequisites: Senior standing in Engineering. Group study of a selected topic or topics in civil engineering. (F,SP) Staff

199. Supervised Independent Study. (1-4) Course may be repeated for a maximum of four units per semester; Enrollment is restricted; see the Introduction to Courses and Curricula section of this catalog. Individual conferences. Must be taken on a passed/not passed basis. Prerequisites: Consent of instructor and major adviser. Supervised independent study. (F,SP) Staff

Graduate Courses

200A. Environmental Fluid Mechanics. (3) Students will receive no credit for 200A after taking 105 before fall 1999. Three hours of lecture per week. Prerequisites: 100; Mathematics 53, 54 or equivalents. Formerly 105. Introduction to fluid mechanics in the environment. Fluid flow equations; turbulence modeling; mixing, diffusion, dispersion; contaminant transport; physical and chemical processes in the oceans and atmosphere; and steady and unsteady flow in porous media. Application to environmentally sensitive systems in the ground and surface waters in and under the ocean. (F) Chow, Stacey

200B. Numerical Modeling of Environmental Flows. (3) Course may be repeated for credit as topic varies. Three hours of lecture per week. Prerequisites: 105 or 200A, or consent of instructor. Formerly 204. Introduction to the philosophy and practice of numerical modeling of environmental flows. Topics will change each semester. Course of structured computer modeling assignments on a single topic in environmental flow modeling, supported by focused lectures and discussions on the physical processes and on the associated numerical analysis. Topics include nonequilibrium, wave generation in harbors, contaminant transport, flood and tide propagation in channels and riverbasins, free and forced waves, and water quality observations. (SP) Chow

200C. Transport and Mixing in the Environment. (3) Three hours of lecture per week. Prerequisites: 100, Math 53 and 54, or equivalent. Formerly 209A. Application of principles of mechanical transport and mixing in the environment. Fundamentals of turbulence, turbulent diffusion, and shear dispersion in steady and oscillatory flows and the effects of stratification. Application to rivers, estuaries, the coastal ocean, and the lower atmosphere. (F) Stacey

202A. Vadose Zone Hydrology. (3) Students will receive no credit for 202A after taking 202 before fall 1999. Three hours of lecture per week. Prerequisites: 173 or equivalent. Formerly 202. Course addresses topics fundamental to understanding transport phenomena in the vadose zone, which is the geologic media between the land surface and the regional water table. A theoretical framework for modeling these phenomena will be presented, followed by applications in the areas of ecology, drainage and irrigation, and contaminant transport. Hands-on applications using numerical modeling and analysis of real-life problems and field experiments will be emphasized. (F) Rubin

202B. Geostatistics and Stochastic Hydrogeology. (3) Students will receive no credit if 200B completed before fall 1999. Three hours of lecture per week. Prerequisites: 173 and Mathematics 53, 54 or equivalent, or consent of instructor. Formerly 206B. Topics in analysis and modeling of spatial heterogeneity in the earth sciences and the flow and transport processes in geological environments. Course emphasizes modeling of flow and transport under conditions of spatial heterogeneity of the geohydrologic parameters. Fundamentals of the stochastic approach to spatial variability analysis, known as geostatistics, and further developments, as well as practical applications of flow and transport in heterogeneous formations. (SP) Rubin

203N. Surface Water Hydrology. (3) Three hours of lecture per week. Prerequisites: 103 or equivalent, or consent of instructor. Formerly 203. Course addresses topics of surface water hydrology, such as processes in the atmosphere, the land surface, and within soil; advanced representation and models for infiltration and evapotranspiration processes; partition of water and energy budgets at the land surface; snow and ice melt processes; application of hydrology; flood and drought, and issues related to advanced hydrological modeling. Students will address practical problems and will learn how to use the current operations hydrologic forecasting model, and build hydrological models. (F) Staff

205B. Margins of Quality for Engineered Systems. (3) Three hours of lecture per week. Prerequisites: 125, 193 or equivalents and senior design experience. Processes and procedures to design and determine the degree of certainty of the design of engineered systems. Elements of design margins of engineered systems during their life-cycles: margins of quality. The objective of this course is to provide students with the knowledge and skills to define, evaluate, and design margins of quality. (F) Staff

206N. Planning and Management of Environmental and Water Systems. (3) Three hours of lecture per week. Prerequisites: 103 or equivalent and coursework in aquatic chemistry, or equivalent and coursework in microbiology recommended; graduate standing or consent of instructor. Formerly 206. Course addresses the fundamental and practical issues of environmental and water planning and management. Quantitative overview of the engineering, economic, and policy aspects of water and environmental systems will be presented. Topics in water and environmental planning and management include water costs, contingency analysis, inflation, pricing, transfers, uncertainty and decision analysis, and system analysis and their applications. (SP) Staff

210A. Control of Water-Related Pathogens. (3) Three hours of lecture per week. Prerequisites: Basic course in microbiology recommended; graduate standing or consent of instructor. Formerly 198A. Applied microbiology; topics of interest include the assessment and control of water-related human pathogens (disease-causing microorganisms). Transmission routes and life cycles of common and emerging organisms, conventional and novel methods (based on molecular techniques), human and animal sources, fate and transport in the environment, treatment and disinfection, appropriate technology, regulatory approaches, water reuse. (SP) Nelson

211A. Environmental Physical-Chemical Processes. (3) Three hours of lecture per week. Prerequisites: 111 or equivalent and coursework in aquatic chemistry, or consent of instructor. Fundamental concepts of physical-chemical processes that affect water quality in natural and engineered environmental systems. Focus is on developing a qualitative understanding of mechanisms as well as quantitative tools to describe, predict, and control the behavior of physical-chemical processes in water in the atmosphere, over land surface, and within the aquatic environment. Flux equation analyses; unsteady free dispersion, and contaminant transport; geophysical flows and transport in heterogeneous formations. (SP) Rubin

211B. Environmental Biological Processes. (3) Three hours of lecture per week. Prerequisites: 111 or equivalent and coursework in aquatic chemistry, or consent of instructor. Fundamental concepts of biological processes that are important in natural and engineered environmental systems, especially those affecting water quality. Incorporates basic fundamentals of microbial biology into a quantitative engineering context to describe, predict, and control behavior of environmental biological systems. Topics include the stoichiometry, energetics and kinetics of microbial reactions, dispersed and attached biofilm processes, and nutrient cycling, and bioremediation applications. (SP) Alvarez-Cohen
212. Water Quality Engineering. (3) Three hours of lecture per week. Prerequisites: 111 or consent of instructor. Principles and engineering applications of natural and nonnatural waters for water and wastewater treatment, and water reclamation: separation and transformation technologies (sedimentation, membrane processes, oxidation, biodegradation, activated sludge, biological treatment of dissolved pollutants, solids processing, disinfection). Application of fundamental principles for process analysis and design with a focus on commonalities in applications across industries. Regulatory process and drivers. (SP) Hermanowicz

214. Environmental Analytical Chemistry. (3) One hour of lecture and six hours of laboratory per week. Prerequisites: 115 or equivalent. This course addresses the principles and practices used to quantify trace elements, organic pollutants, smog-forming gases, and nutrients. Students will learn analytical techniques to quantify pollutants in air, sediments, soils, and water at sites of local interest. In addition, they will assist pollutant fate, transport and degradation as well as techniques for remediating environmental contamination. During the final third of the course, students will implement independent projects to characterize pollutants at a site of their choice. (SP) Sedlak

215. Process Engineering Laboratory. (3) One hour of lecture and six hours of laboratory per week. Prerequisites: 211, 212 may be taken concurrently. Unit operations and processes for water and wastewater treatment. Lectures and laboratories on tracers, filtration, aeration, ion exchange treatment of wastewater, biological filters, activated sludge, and anaerobic digestion. (SP) Hermanowicz

216. Hazardous and Industrial Waste Treatment. (3) Three hours of lecture per week. Prerequisites: 211 and 212 (taken concurrently). Sources and characteristics of hazardous wastes and industrial waste in the context of current regulations. Theory and design of commonly used and highly innovative treatment technologies applicable to a range of hazardous and industrial wastes. State-of-the-art approaches to remediation of hazardous waste sites and groundwater contamination. (SP) Alvarez-Cohen

217. Environmental Chemical Kinetics. (3) Three hours of lecture per week. Prerequisites: Graduate standing in engineering or consent of instructor. Quantitative overview of the characterization and control of air pollution problems. Summary of fundamental chemical and physical processes governing pollutant behavior. Analysis of key elements of the air pollution system: sources and control techniques, atmospheric transformation, atmospheric transport, modeling, and air quality management. (F) Nazaroff, Harley

218A. Air Quality Engineering. (3) Three hours of lecture per week. Prerequisites: Graduate standing in engineering or consent of instructor. Quantitative overview of the characterization and control of air pollution problems. Summary of fundamental chemical and physical processes governing pollutant behavior. Analysis of key elements of the air pollution system: sources and control techniques, atmospheric transformation, atmospheric transport, modeling, and air quality management. (F) Nazaroff, Harley

218B. Air Pollutant Dynamics. (3) Hours of lecture per week. Prerequisites: 218A. Study of the behavior of industrial and particulate air pollutants with application to understanding the fate of pollutants, control device performance, and measurement systems. Particle and gas deposition. Light scattering and visibility. Interaction of atmospheric systems. Issues in monitoring and experimentation. (SP) Nazaroff


219. Contaminant Transport Processes. (3) Three hours of lecture per week. Prerequisites: 100 and 111 (173 recommended). The fate of contaminants in the environment is a complex process that involves transport in a single media and between media. The similarities in contaminant dispersion within air, surface water, and groundwater will be emphasized. Interphase transport (air-water, liquid-vapor, solid-soils, solid-surface, dense-gas and fluid) will then be considered from an equilibrium perspective followed by the kinetics of mass transfer across environmental interfaces. (SP) Hunt


222. Finite Element Methods. (3) Three hours of lecture per week. Prerequisites: 220 or equivalent, 131 or 231. Approximation of the solutions of the equilibrium and stress in solids. Finite element formulations for frame, plane stress/strain, axisymmetric, torsion, and three-dimensional elastic problems. The isoparametric formulation of plane stress and shell elements. Finite element modeling of structural systems. (SP) Fvenes, Govindjee

225. Dynamics of Structures. (3) Three hours of lecture per week. Prerequisites: 220 (may be taken concurrently) or equivalent. Evaluation of deformations and forces in single-degree-of-freedom or discrete-parameter multi-degree of freedom systems, due to dynamic forces. Evaluation of earthquake-induced deformations and forces in structures by linear response history analysis; estimation of maximum response by response spectrum analysis; effects of inelastic behavior. Laboratory demonstrations. (F) Chopra, Fvenes

226. Random Vibrations. (3) Three hours of lecture per week. Prerequisites: 225. Introduction to probability theory and correlation and power spectral density functions. Estimation of correlation functions and ergodicity. Stochastic dynamic analysis of structures subjected to stationary and non-stationary random excitations. Probability, reliability, and distributions of peaks and extremes. Applications in earthquake, wind and ocean engineering. Offered odd-numbered years. (F) Der Kiureghian


C231. Mechanics of Solids. (3) Students will receive no credit for 231 after taking 231A or 231B prior to Fall 1992. Three hours of lecture per week. Prerequisites: Graduate standing or consent of instructor. Mechanical response of materials: Simple tension in elastic, plastic and viscoelastic materials. Continuum mechanics: stress and strain, equilibrium, compatibility. Three-dimensional elastic, plastic and viscoelastic problems. Thermal, transformation, and dealing stresses. Applications: Plane problems, stress concentrations at defects, metal forming problems. Also listed as Materials Science and Engineering C211. (F) Govindjee

232. Structural Mechanics. (3) Three hours of lecture per week. Prerequisites: 231 or consent of instructor. The goal of this course is to study the theories of structural mechanics within the nonlinear continuum mechanics of solids. Finite elasticity; invariance. Energy principles: principles of virtual and complementary virtual work; primary and mixed variational principles. Theory of stability; stability in compression under follower loads. Classical theories of beams; planar, torsional, and lateral buckling. Plate theories. Invariant theories of structural mechanics: directed continua; Cosserat theories of rods. (SP) Amoro


234. Computational Inelasticity. (3) Three hours of lecture per week. Prerequisites: 231 or Materials Science and Engineering 211 or Mechanical Engineering 185. Computational methods applied to inelastic de- sign of solids: 1) Relationship between the deformation continuum plasticity and viscoelasticity models and their algorithmic approximations; viscoplastic regularizations and softening; thermodynamics and its correspondent to algorithmic return mappings, closest-point projections and fluxes; application to metals, soils, concrete, and polymers in corporation into finite element codes. Offered odd-numbered years. (F) Amoro, Govindjee

C236. Micromechanics. (3) Three hours of lecture per week. Prerequisites: Graduate standing in Materials Science and Engineering C211, or consent of instructor. Basic theories, analytical techniques, and mathematical foundations of micromechanics. It includes 1) physical-mathematical theory; micromechanics of dislocation, and cohesive fracture models; 2) micro-elasticity that includes Eshelby’s eigenstrain theory, comparison variational principles, and micro-crack/fracture based techniques. Theory of composite material that includes the main methodologies in evaluating overall material properties; 4) meso-plasticity that includes meso-damage theory, and the crystal plasticity; 5) homogenization theory for materials with periodic microstructures. Airframe, and Pipeline. (SP) Der Kiureghian

C237. Computational Nano-mechanics. (3) Three hours of lecture per week and one hour of laboratory every two weeks. Prerequisites: Graduate standing or consent of instructor. Basic mathematics foundations, physical and mechanical models, continuum mechanics and algorithms that are used in nanoscale simulations and modeling. They include cohesive finite element...
240. Civil Engineering Materials. (3) Two hours of lecture and three hours of laboratory per week. Prerequisites: 122 or equivalent. Properties of fresh and hardened concrete; strength, elastic behavior, creep, shrinkage, and durability to chemical and physical attacks. New concrete-making materials. Recent advancements in concrete technology: high-strength, high-workability, and high-performance concrete; fiber-reinforced concrete, and roller-compacted concrete. (SP) Monteiro, Oster tag

241. Concrete Technology. (3) Three hours of lecture per week. Prerequisites: 165 or equivalent. Properties of concrete, wood, and steel. Differences and similarities in response to loading and environmental effects on these materials, with emphasis on strength, elastic properties, creep, shrinkage, thermal stresses, and failure mechanisms. (F) Monteiro, Oster tag

244. Reinforced Concrete Structures. (3) Three hours of lecture per week. Prerequisites: 123. Analysis and design of reinforced concrete beams and columns for flexure, shear, axial load, torsion, and anchorage; analysis and design of two-way slabs using the direct design method, equivalent frame method, and strip method; behavior and design of reinforced concrete frame and frame-wall structures for gravity and lateral loads. (F) Ragland

245. Behavior of Reinforced Concrete. (3) Three hours of lecture per week. Prerequisites: 123 and 220. Advanced topics in reinforced concrete construction, including inelastic flexural behavior; applications of plastic analysis to reinforced concrete frames; behavior in inelastic flexure; yield-line analysis of slabs under cyclic and reversed loading; seismic rehabilitation. Offered even-numbered years. (SP) Moehle

246. Prestressed Concrete Structures. (3) Three hours of lecture per week. Prerequisites: 244 or consent of instructor. Behavior and design of statically de-
termine prestressed concrete structures under bending moment, shear, torsion and axial load effects. Design of continuous prestressed concrete beams, frames, slabs, and special reinforcement for deflections of prestressed concrete structures. Applications to the design and construction of bridges and buildings. (SP) Filipoupo, Moehle

247. Design of Steel and Composite Structures. (3) Three hours of lecture per week. Prerequisites: 244 or consent of instructor. Behavior and design of steel plate girders and shear walls. Design of bracings for stability. Design of members subjected to torsion. Design of composite beams, columns, and beam-columns. Behavior and design of steel, semi-rigid and moment connections. Concepts used in design of gusset plates and base plates. Selection and design of steel and composite systems. (SP) Astaneh, Mahin

248. Behavior and Plastic Design of Steel Structures. (3) Three hours of lecture per week. Prerequisites: 220 or equivalent. Topics related to inelastic behavior and plastic design of steel members and structures. Behavior of plastic hinge in members subject-
ted to bending moment, axial force, and their combinations. Collapse mechanisms of steel members and structures such as moment frames and braced systems. Inelastic cyclic behavior of steel components. Introduction to fracture and fatigue of steel components. Offered even-numbered years. (F) Astaneh, Mahin

249. Experimental Methods in Structural Engineering. (3) Two hours of lecture and three hours of laboratory per week. Prerequisites: Graduate standing or consent of instructor. Course covers the following topics: similitude laws, design of structural models, instrumentation and measurement techniques; use of computers to acquire data and control tests; pseudo-dynamic testing method; standard proof-testing for ca-
cacity assessment; non-destructive testing for condi-
tion assessment, and virtual experimentation. Upon completion of the course, student is able to use experimental methods to investigate the behavior of a structure and to evaluate its condition. Offered odd-numbered years. (F) Stojadinovich, Mahin

250. Transportation Systems, (2) Two hours of lecture per week. Prerequisites: 250, 251, 252, or consent of instructor. Analysis and evaluation of mass transit systems, their operation and management. Transportation system design for urban land use. Public policy and financing. (SP) Cassidy, Hansen

260. Air Transportation. (3) Three hours of lecture per week. Prerequisites: Graduate standing or consent of instructor. Nature of civil aviation; structure of the air-
line industry; aircraft characteristics; airport aircraft noise; navigation and air traffic control; airport planning and design; airline operations; aviation sys-
tem planning. (F) Hansen, Kanafani

261. Infrastructure Systems Management. (3) Three hours of lecture per week. Prerequisites: 262 or equivalent. Integrated treatment of quanti-
tative and analytical methods for the management of infrastructure facilities over their life. The focus of the course is on statistical modeling and numerical opti-
ization methods and their application to managing the lifetimes of civil infrastructure, with an emphasis on transportation facilities. (SP) Madanat

262. Analysis of Transportation Data. (3) Three hours of session per week. Prerequisites: College cal-
culus or consent of instructor. Probabilistic methods in trans-
formation. The use of field data. Data gathering techniques, sources of errors, considerations of sam-
ple size. Experiment design for demand forecasting and transportation operations analysis. Analysis tech-
niques. (F) Daganzo, Hansen

263. Operations of Transportation Terminals. (3) Three hours of session per week. Prerequisites: Gradu-
ate standing or consent of instructor. Characteristics of terminals on a mode by mode basis (sea ports, rai-
lyards, airports, parking lots, etc.). Methodologies used to study terminal operations and management of congestion. (Chromographs, input-output diagrams, pricing, simulation). Studies illustrating the use of the methodologies for different modes. (SP) Daganzo

265. Highway Traffic Operations. (3) Three hours of lecture per week. Prerequisites: 251 or consent of in-
sstructor. Operational planning and management of the highway transportation system. The highway system is presented as a set of operating environments with each having its unique analytical framework. Major top-
ics to be covered include policy and institutional issues, selection of strategies and tactics, evaluation of objec-
tives and measures of effectiveness. (F) Sengupta, Skabardonis

268. Civil Systems and the Environment. (3) Three hours of lecture per week. Prerequisites: 168 or 167 or equivalent. Methods and tools for economic and envi-
ronmental analysis of civil engineering systems. Fo-
cus on construction, transportation, and operation, and maintenance of the built infrastructure. Life-cycle plan-
ing, design, costing, financing, and life-cycle evalu-
ations. Industrial ecology, design for environment, pollution prevention, external costs. Models and soft-
ware tools for life-cycle economic and environmental (airlines, postal, etc.), the role of transhipments and terminals in logistic systems for the transportation of goods and passengers, public and private trans-
portation facilitation system design. Relevant methodologies. (F) Daganzo

259. Public Transportation Systems. (2) Two hours of lecture per week. Prerequisites: 250, 251, 252, or consent of instructor. Analysis and evaluation of mass transit systems, their operation and management. Transportation system design for urban land use. Public policy and financing. (SP) Cassidy, Hansen

259. Public Transportation Systems. (2) Two hours of lecture per week. Prerequisites: 250, 251, 252, or consent of instructor. Analysis and evaluation of mass transit systems, their operation and management. Transportation system design for urban land use. Public policy and financing. (SP) Cassidy, Hansen

267F. High-Tech Building and Industrial Con-
struction. (3) Three hours of lecture per week. Pre-
requisites: Graduate standing or consent of instructor. Introduction to “smart” buildings and “high-tech” industrial projects. Describe terminology, engineering design characteristics, components, and materials. Perform design calculations. Stress con-
struction and installation methods. Discuss contractual relationships and coordination requirements between owners, design firms, and general as well as specialty contractors. (F) Tommelein

268. Civil Systems and the Environment. (3) Three hours of lecture per week. Prerequisites: 168 or 167 or equivalent. Methods and tools for economic and envi-
ronmental analysis of civil engineering systems. Fo-
cus on construction, transportation, and operation, and maintenance of the built infrastructure. Life-cycle plan-
ing, design, costing, financing, and life-cycle evalu-
ations. Industrial ecology, design for environment, pollution prevention, external costs. Models and soft-
ware tools for life-cycle economic and environmental
This course will provide a broad survey of the principles of leadership and management, and organizational behavior and change. (SP) Bea

268H. Advanced Project Planning and Control. (3) Three hours of lecture per week. Prerequisites: 167 or equivalent. This course will provide a broad survey of management practices critical to starting and managing a business in the engineering and construction industries. Topics covered include advanced Instrumentation, data acquisition, and analysis of transient signals, and their application to civil systems. In particular, the fundamentals of sensor usage and signal processing, and their application to civil systems. (SP) Ibbs

270A. Advanced Soil Mechanics. (3) Three hours of lecture per week. Prerequisites: 175 or equivalent. Advanced treatment of topics in soil mechanics, including state of stress, consolidation and settlement analysis, shear strength of cohesionless and cohesive soils, and slope stability analysis. (F) Bray, Pestana

270B. Advanced Foundation Engineering. (3) Three hours of lecture per week. Prerequisites: 270A or consent of instructor. Advanced treatment of topics in foundation engineering, including economic investigation of foundation support, analysis and design of shallow and deep foundations. (SP) Bray, Pestana, Seed

270L. Advanced Soil Mechanics Laboratory. (3) One and one-half hours of lecture and three hours of laboratory per week. Prerequisites: 270A, 270B (concurrently), or consent of instructor. Lectures and experimental studies of advanced aspects of soil property measurement with application to analysis and design. Concepts of control and critical state, plasticity, static, cyclic triaxial and simple shear testing under stress and strain-control with pore pressure measurements, undisturbed sampling and sample handling, in-situ field testing, and related topics including advanced instrumentation, data acquisition, and measurement techniques. (SP) Riemer, Seed

271. Sensors and Signal Interpretation. (3) Three hours of lecture per week. Prerequisites: Graduate standing or consent of instructor. An introduction to the fundamentals of analog and digital signal processing and their application to civil systems. In particular, the course focuses on how basic classes of sensors work, and how to go about choosing the best of the new MEMS sensors available for an application. The interpretation of the data focuses on analysis of transient signals, an area typically ignored in traditional signal processing courses. Goals include development of a critical understanding of the assumptions used in common analysis methods and their implications, strengths, and limitations. (SP) Glaser

272. Numerical Modelling in Geomechanics. (3) Three hours of lecture per week. Prerequisites: Graduate standing or consent of instructor. Constitutive laws for soils including elatic-hydroplastic and elasto-plastic Cam-clay; soil behavior and critical state soil mechanics; application of the finite element method to static analysis of earth structures; the Discontinuous Deformation Analysis method. (SP) Bray, Pestana

274. Environmental Geotechnics. (3) Three hours of lecture per week. Prerequisites: 173, 175, or equivalents. Geotechnical practice in environmental protection at waste sites and landfills, contaminant control, and surface contamination site characteriza-
tion for siting of waste repositories and site restoration. Influence of physical and chemical processes on the evaluation of contaminant distribution. Evaluation of contaminants including dissolved, solid, and gas phase contaminants. (SP) Ibbs

275. Geotechnical Earthquake Engineering. (3) Three hours of lecture per week. Prerequisites: 175 or equivalent. Seismicity, influence of soil conditions on site response, seismic site response analysis, evaluation and modelling of dynamic soil properties, analysis of seismic soil-structure interaction, evaluation and interpretation of soil liquefaction and its consequences, seismic code provisions and practice, seismic earth pressures, seismic slope stability and deformation analysis, seismic safety of dams and embankments, seismic performance of pile foundations, and additional current topics. (F) Bray, Seed

281. Engineering Geology. (3) Two hours of lecture and three hours of laboratory per week. Prerequisites: A course in physical geology. Influence of geologic origin and history on the engineering characteristics of soils and rocks. The course includes elaboration of geologic, design, and construction of engineering works. (F) Star

285A. Electrical and Electromagnetic Methods in Applied Geophysics. (3) Students will receive no credit for Mining Engineering 233 and 234 taken prior to Fall 2001. Three hours of lecture per week. Formerly Mineral Engineering 233. The theory and practice of electrical and electromagnetic methods for mapping the distribution of electrical resistivity and dielectric in the subsurface. Laboratory includes measurements of resistivity and dielectric to mineralogy, porosity, saturation, pore fluid and clay content. Induction systems and ground penetrating radar (GPR). Selection of appropriate methods for metal location, groundwater, environmental and geological studies, well logging, mineral and petroleum exploration, and crustal tectonics. (SP) Staff

285C. Seismic Methods in Applied Geophysics. (3) Students will receive no credit for 285C after taking Mining Engineering 236 before Fall 2001. Three hours of lecture per week. Formerly Mineral Engineering 236. This course provides an overview of seismic methods used to image the subsurface. Acquisition, processing, and interpretation of seismic data are discussed, with application to petroleum production, environmental, engineering, and groundwater investigation. (SP) Rector

286. Digital Data Processing. (3) Students will receive no credit for 286 after taking Mining Engineer-
ing 240 taken before Fall 2001. Three hours of lecture per week. Prerequisites: Consent of instructor. Formerly Mineral Engineering 240. Considerations for digital signal processing and data analysis. Fourier Transforms, convolution and correlation. Discrete linear systems, 2 transforms. Digital processing of seismic reflection data and migration. Introduction to 3-D seismic data. (F) Rector

290A. Human and Organizational Factors: Quality and Reliability of Engineered Systems. (3) Three hours of lecture/discussion per week. Prerequisites: Graduate standing. This course addresses human and organizational factors affecting the quality and reliability of engineered systems during their life-cycles (concept development through decommissioning). Applications tested and verified proactive, reactive, and integration approaches are developed and illustrated. (SP) Bea

290C. Watersheds and Water Quality. (3) Two hours of lecture and one hour of discussion per week. Prerequisites: 113 or 118 and graduate standing. Overview of approaches used by engineers to preserve or improve water quality at the watershed scale. Characterization and modeling of nutrients, metals, and other contaminants in watersheds. Application of ecosystem modification and pollutant trading to enhance water quality. The course emphasizes recent case studies and interdisciplinary approaches for solving water quality problems. (SP) Sedlak


290F. Advanced Topics in Seismology. (3) Course may be repeated for credit with consent of instructor. Three hours of lecture per week. Prerequisites: Introductory course in seismology, 286 or Mineral Engineering 240. Formerly Mineral Engineering 290C. Active areas of research in applied seismology. Subjects include: anisotropic and viscoelastic wave propagation, bounding and seismological. Weekly topics include include crosswell seismic tomography, vertical seismic profiling, reservoir monitoring including passive seismic methods. (SP) Rector

290G. Advanced Topics in Potential and Electro-
netics. (3) Three hours of lecture per week. Prerequisites: 285A, Physics 110A-110B or equivalent and an introductory course in geophysics. Formerly Mineral Engineering 290D. Electromagnetic in geology, fluid flow systems, and groundwater. Three hours of lecture per week. Offered odd-numbered years. (F) Staff

290H. Petroleum Capstone Design. (3) Students will receive no credit for Material Science and Engineering 180 taken prior to Fall 2001. Three hours of lecture per week. We follow the process of discovering and evaluating a reservoir for commercial viability with particular emphasis on producing clean energy from plane wave, line, and dipole sources. First and second day domain solutions with finite difference, finite element, and integral equation techniques. Inversion and imaging. Course will emphasize reservoir development and new research directions. (F) Staff

290I. Petroleum Capstone Design. (3) Students will receive no credit for Material Science and Engineering 180 taken prior to Fall 2001. Three hours of lecture per week. We follow the process of discovering and evaluating a reservoir for commercial viability with particular emphasis on producing clean energy from plane wave, line, and dipole sources. First and second day domain solutions with finite difference, finite element, and integral equation techniques. Inversion and imaging. Course will emphasize reservoir development and new research directions. (F) Staff

290J. Advanced Topics in Geotechnical Engi-
neering. (3) Three hours of lecture per week. Prerequisites: Advanced standing or consent of instructor. Mathematical methods and information technologies for controlling CEE systems. Emphasizes designing component interactions that interact with the world in real-time to control a large system. Methods applied to transportation operations, supply chains, and structures. Management of design complexity by hierarchical specification, systematic use of simulation and verification tools, semantics, polymorphism, information management services, and compilation from high-level design languages. (F) Sengupta

290K. Topics in Fluid Mechanics. (1-2) Course may be repeated for credit. One hour of seminar per week. Must be taken on a satisfactory/unsatisfactory
Students will understand the basis. The course will include supervised teaching of laboratory techniques, bio-fluid dynamics, bio-fluid dynamics, oceanography, free surface flows, non Newtonian fluid mechanics, among other possibilities. Also listed as Environ Sci, Policy, and Management C290N, Mathematical Physics C290C, Chemical Engineering C295M, Nuclear Engineering C290F, Mechanical Engineering C298A, and Bioengineering C290C. (F,SP) Staff

290L. Law for Engineers. (3) Three hours of lecture per week. Engineering involves many parties with diverse interests; the contract will form the framework for their interaction. Contracts for engineering services establish both risk allocation and reciprocal liabilities. Issues of contract formation, performance, breach, and remedy are covered. Standard of care and professional negligence are emphasized during the discussion of tort law. Other topics include regulation, legal relationships, litigation, and alternative dispute resolution. (SP) Staff

290M. Improving Performance in Engineering and Construction (3) Three hours of lecture per week. Prerequisites: Graduate standing in Civil and Environmental Engineering. Students will understand the potential for, and obstacles to, improving performance. Will learn about measurement and supporting data; how to collect that data, and how to use the data. The perspective adopted will be that of the consultant. (F) Ballard

290N. Advanced Construction Engineering (3) This course will cover the art and science of applying engineering and management expertise from the working task level. Actual projects will be studied in terms of specific design and construction technologies. Major topics include constructability; subcontractor and supplier management; material control; quality and productivity management; and construction facilities and site development. (SP) Tommelein

290P. Strategic Issues of the Engineering Construction Industry. (3) Three hours of lecture per week. Prerequisites: Graduate standing or consent of instructor. Strategic issues of engineering and construction in the present highly competitive market. Advanced methods of managing complex projects in all phases of activities starting with concept development, through engineering, procurement, and operational startup. Project economics and finance are given special attention. (F) McDonald

290R. Advanced Topics in Geologic Engineering. (1-2) Course may be repeated for credit. Seminar meetings each week. Prerequisites: Consent of instructor. Topics vary each semester. (SP) Star

290T. Advanced Topics in Transportation Theory. (1) Course may be repeated for credit. One hour of lecture per week. Must be taken on a satisfactory/unsatisfactory basis. Prerequisites: Consent of instructor. Selected topics in the mathematical analysis of transportation systems. Topics will vary from year to year. (SP) Cassidy, Daganzo

290U. Transportation and Land Use Planning. (3) Three hours of lecture per week. Prerequisites: 113A or equivalent. Examination of the interactions between transportation and land use systems; historical perspectives on transportation; characteristics of travel and demand estimation; evaluation of system performance; location theory; models of transportation and urban structure; empirical evidence of transportation-land use impacts; case study examinations. Also listed as City and Regional Planning C213. (F) Cervero

290V. Transportation Finance. (3) Three hours of lecture/discussion per week. This course will explore the economic and financial dimensions of urban transportation systems, including highway finance and user fees, toll congestion and pricing concepts, transit finance, and fare and subsidy policies. Class will review debates over the full social costs of transportation systems and current topics, including the politics of transportation sales taxes. Also listed as City and Regional Planning C216.

290X. Geoenvironment Engineering Graduate Seminar. (1) Course may be repeated for credit. One hour of seminar per week. Must be taken on a satisfactory/unsatisfactory basis. Prerequisites: Graduate standing or consent of instructor. Advanced treatment of a variety of Geoenvironment topics. Presentations are given by advanced practitioners and researchers from around the world. The seminars are balanced between case histories and fundamental research. (F,SP) Staff

290Z. Selected Topics in Air Transportation. (2) Two hours of lecture per week. Prerequisites: 260 (may be taken concurrently). Current developments in air transportation. Topics of current interest, including methodologies and practices of operations analysis, aircraft performance, airline pricing, and issues of airline transportation policy. Staff

291F. Control and Optimization of Distributed Parameters Systems. (3) Three hours of lecture per week. Prerequisites: Engineering 77, Mathematics 54 (or equivalent), or consent of instructor. Distributed systems and PDE models of physical phenomena (propagation of waves, network traffic, water distribution, fluid mechanics, electromagnetism, blood vessels, flow phenomena) are used to develop fundamental solution methods for PDEs: separation of variables, self-similar solutions, characteristics, numerical methods, spectral methods. Stability analysis. Adjoint-based optimization. Lyapunov stabilization. Differential flatness. Viability control. Hamilton-Jacobi-based control. Also listed as Electrical Engineering C291 and Mechanical Engineering C236. (SP) Bayen

292A. Technologies for Sustainable Societies. (1) This course may be repeated for credit. One and one-half hours of seminar/discussion per week. Must be taken on a satisfactory/unsatisfactory basis. Prerequisites: Graduate standing or consent of instructor. Exploration of selected important technologies that serve major societal needs, such as shelter, water, food, energy, and transportation, and waste management. How specific technologies or technological systems do or do not contribute to a move toward sustainability. Specific topics vary from year to year according to student and faculty interests. (F) Horvath, Nazaroff

292A. Technologies for Sustainable Societies. (1) Course may be repeated for credit. One and one-half hours of seminar/discussion per week. Must be taken on a satisfactory/unsatisfactory basis. Prerequisites: Graduate standing or consent of instructor. Assessment of the consequences and opportunities of various technological systems (energy, buildings, transportation, materials, waste management) for sustainable development of society. Political and economic structures of societal decision making. Environmental consequences of various technologies. Metrics and measurement. Specific topics vary from year to year according to student and faculty interests. Course meetings include a mix of faculty lectures and student-led seminar presentations. Also listed as Energy and Resources Group C293A. (F) Gadgil, Horvath, Nazaroff

297. Field Studies in Civil and Environmental Engineering. (1-12) Course may be repeated for credit. One to twelve hours of fieldwork per week. Must be taken on a satisfactory/unsatisfactory basis. Prerequisites: Graduate standing. Supervised experience in off-campus companies relevant to specific aspects and applications of civil and environmental engineering. Written report required at the end of the semester. Course does not satisfy unit or residence requirements for a master’s or doctoral degree. (F,SP) Staff

298. Group Studies, Seminars, or Group Research. (1-6) Course may be repeated for credit. Must be taken on a satisfactory/unsatisfactory basis. Prerequisites: Graduate standing. Advanced studies in various subjects through special seminars on annually selected topics or individual group studies of special problems, group participation in comprehensive design problems, or group research on complete problems for analysis and experimentation. (F,SP) Staff

299. Individual Research. (1-12) Course may be repeated for credit. Must be taken on a satisfactory/unsatisfactory basis. Prerequisites: Graduate standing. Individual study with major field adviser. Must not be used to meet either unit or residence requirements. (F,SP) Staff

601. Individual Study for Master’s Students. (1-6) Course may be repeated for credit. Must be taken on a satisfactory/unsatisfactory basis. Individual study for the comprehensive or language requirements in consultation with the major field adviser. Units may not be used to meet either unit or residence requirements. (F,SP) Staff

602. Individual Study for Doctoral Students. (1-6) Course may be repeated for credit. Must be taken on a satisfactory/unsatisfactory basis. Individual study in consultation with the major field adviser, intended to provide an opportunity for qualified students to prepare for the various examinations required of candidates for doctoral degrees. May not be used for unit or residence requirements. (F,SP) Staff

Professional Courses

301. Workshop for Future Civil and Environmental Engineers. (1-3) Course may be repeated for credit. Two hours of lecture per week. Must be taken on a satisfactory/unsatisfactory basis. Prerequisites: Teaching assistant or graduate student status. The course will include supervised teaching of laboratory sections of civil engineering courses, group analysis of videotapes, reciprocal classroom visitations, and an individual project. (F,SP) Staff

Classics

(College of Letters and Science)

Department Office: 7233 Dwainne Hall, (510) 642-4218 classics.berkeley.edu

Chair: Leslie Kurke, Ph.D.

Professors

Anthony W. Bulloch, Ph.D. Cambridge University. Greek literature, language, and religion David J. Cohen (The Chancellor’s Professor, 1998-2001), Ph.D. Cambridge University. Divinity School, University of California, Los Angeles. Ancient rhetoric, classical Greek law, political and legal theory
Susanna Elm, D.Phil. Oxford University. History of late antiquity, early Christianity
G. R. (John) Ferrai, Ph.D. Cambridge University. Ancient philosophy and literature
E. Greene, W. (Emeritus), Ph.D. University of Pennsylvania. Greek and Roman art and archaeology
David Griffith, Ph.D. Cambridge University. Greek and Roman literature and culture
Leslie V. Kurtz, Ph.D. Dumbarton Oaks. Greek literature and cultural history
Anthony A. Long (The Irving Stone Professor of Literature), Ph.D. Harvard University. Ancient literature, modern Greek literature
Donald J. Kagan, Ph.D. University of Toronto. Greek and Latin literature
Andrew F. Stewart (The Chancellor’s Professor, 1998-2001), Ph.D. Cambridge University. Greek literature, ancient art, archaeology
Ralph J. Hexter, Ph.D. (Emeritus)
Robert C. Knapp, Ph.D. (Emeritus)
Stephen G. Miller, Ph.D. (Emeritus)
Charles E. Murgia, Ph.D. (Emeritus)
A. J. (John) Piggott, Ph.D. (Emeritus)
W. Kendrick Pritchett, Ph.D. (Emeritus)
Ronald S. Shoup, Ph.D. (Emeritus)
Leslie H. Theate, Ph.D. (Emeritus)

Associate Professors

Christopher Halliet, Ph.D. University of California, Berkeley. Roman and Latin literature
Kathleen McCarthy, Ph.D. Princeton University. Roman literature and culture
Trevor Murphy, Ph.D. University of California, Berkeley. Roman prose authors, ethnography
Ellen Olenitis, Ph.D. Yale University. Roman literature and culture
F. M. (Dino) Venturucci, Ph.D. (Emeritus)

Assistant Professors

Sumi Furiya, Ph.D. Harvard University
Todde Hickey, Ph.D. University of Chicago. Greek and Egyptian papyrology, social and economic history
Anton Hildjöcher (2006-07)
Helenet Fossey (2007-08)
Mary Beard (2008-09)
Heinrich von Stadton (2009-10)
Department Overview

The Department of Classics offers a complete undergraduate and graduate program in Greek and Latin languages, literatures, and civilizations. It groups its courses of instruction under the headings of Greek, Latin, and Classics. The object of the Greek and Latin courses is to teach undergraduate and graduates to read major works of ancient literature in the original languages and to give a general understanding of the achievements of classical civilization. The purpose of the Classics undergraduate courses is to provide instruction in Greek and Roman civilization in all its aspects—literature (read in translation), philosophy, mythology, religion, social and political life, and archaeology. The latter courses require no knowledge of Greek and Latin. The graduate courses, all of which are designated Classics, are advanced courses in Greek, Latin, and classical archaeology, all requiring knowledge of one or both of the languages.

The Majors

The Department of Classics offers four undergraduate majors: Greek, Latin, classical languages, and classical civilizations. Students considering any of these majors should consult with the departmental undergraduate adviser as early as possible.

Major in Greek

Elementary Greek (either Greek 1-2 or Greek 10 or the Greek Workshop, offered during Summer Sessions); Greek 40 (may be taken concurrently with upper division courses); Greek 100, 101, and 102; four courses chosen from Greek 115-123; Classics 10A and 10B (under exceptional circumstances, the undergraduate adviser may authorize substitution of Classics 100A-B for 10A, or 100B for 10B); one course from the list of recommended courses available in the departmental office and on the web site.

Major in Latin

Elementary Latin (either Latin 1-2 or Latin 10 or the Latin Workshop, offered during Summer Sessions); Latin 40 (may be taken concurrently with upper division courses); Latin 100, 101, and 102; four courses chosen from Latin 115-123; Classics 10A and 10B (under exceptional circumstances, the undergraduate adviser may authorize substitution of Classics 100A-B for 10A, or 100B for 10B); one course from the list of recommended courses available in the departmental office and on the web site.

Major in Classical Languages

Elementary Greek (either Greek 1-2 or Greek 10 or the Greek Workshop, offered during Summer Sessions); Elementary Latin (either Latin 1-2 or Latin 10 or the Latin Workshop, offered during Summer Sessions); Elementary Classical Languages (either Greek 40 or Latin 40) may be taken concurrently with upper division courses; Greek 100, 101, and 102; Latin 100, 101, and 102; two courses chosen from Greek 115-123, Latin 115-123; Classics 10A and 10B. Majors are encouraged to take additional courses from the list of recommended courses available in the departmental office and on the web site.

Major in Classical Civilizations

Lists of courses approved to meet the requirements described below are available from the departmental office and on the web site.

(a) Prerequisites: Classics 10A and 10B (UGIS R44A may be substituted for one but not both).

(b) Lower division requirements: any two lower division courses in the Classics department (not including Classics 24), or courses from a selected list of courses in ancient art, history, and culture. Go to the Classics web site for a list of acceptable courses.

(c) Area of concentration: Five courses (at least three must be in the Classics department) in one of the following areas of concentration: Classical and Roman Art and Archaeology (five upper division courses from a list of selected courses), Classical History and Culture (five upper division courses from a list of selected courses), Greek Language (five Greek courses including up to two lower division), Latin Language (five Latin courses including up to two lower division). Go to the Classics web site for a list of acceptable courses.

(d) Area of breadth: Two courses from any combination of upper and lower division offerings in a non-Greco-Roman pre-industrial culture (please consult with the Classics undergraduate adviser in selecting these courses).

(e) Two additional upper division courses from a list of selected courses (if not duplicated from other requirements; all students in this major must take Classics 130).

Substitutions

Under exceptional circumstances the undergraduate adviser is empowered to authorize substitution of a more advanced reading course for any required reading course numbered 100 to 102. If such substitution is deemed necessary and advisable.

Honors Program

Restricted to majors with an overall University GPA of at least 3.3 and a GPA of at least 3.3 in the major. Consists of (a) one of the major programs, with the added requirement for students in Classics and classical languages majors that at least one of the Senior Reading courses (Greek 115-123, Latin 115-140) must be in prose and at least one must be in poetry; (b) one semester of Greek H195 (for Greek or classical languages majors), Latin H195 (for Latin or classical languages majors), or Classics H195 (for classical civilizations majors); H195 consists of largely independent study, including the writing of a thesis; the project undertaken in this one-semester honors course (4 units) must be related to work completed in a previous upper division course in the major. The thesis will be evaluated by an Honors Committee of three members; the written thesis is due on Monday of the 13th week of the semester and the committee will agree upon the level of Honors (Honors, High Honors, or Highest Honors) and the grade to be awarded no later than the Monday of examination week.

The Minors

Minor in Classical Civilization. Five upper division courses in the Classics department. Courses or seminars taught by Classics professors in other departments may also be accepted; in consultation with the undergraduate faculty adviser.

Minor in Greek Studies. Five upper division courses in Greek language and related courses. At least three courses must be in the Greek language; up to two courses may be in courses with substantial content relevant to Greek literature, philosophy, culture, or history.

Minor in Latin Studies. Five upper division courses in Latin language and related courses. At least three courses must be in Latin; up to two courses may be in courses with substantial content relevant to Roman literature, philosophy, culture, or history.

Preparation for Graduate Study

To enter graduate study in Classics, students should complete the major in Classical Languages (or the satisfactory equivalent). For those desiring only a master’s degree in Greek or Latin, the corresponding major in Greek or Latin may suffice, but some preparation in the other language is normally necessary. These programs should be regarded as minimum requirements. Students are urged to supplement the requirements for the major in Classical Languages with two or three senior reading courses (Greek 115-123, Latin 115-123). They are strongly advised also to have an adequate reading knowledge of French and German, since they must pass examinations in both for the Ph.D. degree, and one of them may be taken concurrently with upper division courses. Prospective graduate students are also encouraged to take Advanced Prose Composition in Greek and Latin (Classics 250, 260) since the graduate programs require demonstration of competence in prose composition. Note that the major in Classical Civilizations is not considered to be adequate preparation for graduate study.

The Graduate Program

The Master of Arts degree may be taken in Greek, Latin, Classics (each under Plan B: a program of 24 units in graduate and advanced undergraduate courses, and a series of examinations), or Classical Archaeology (under Plan A: a program of 20 units of graduate and advanced undergraduate courses, and a dissertation).

The Doctor of Philosophy degree may be taken in Classics or Classical Archaeology. Whatever the graduate students’ principal interest—literature, history, philosophy, archaeology, or other subjects—they should take a broad program and acquaint themselves with every field of classical study. Students are advised to read widely in Greek and Latin authors of all kinds, in both M.A. and Ph.D. regulations require an extensive knowledge of literature, history, and philosophy. They are also encouraged to enter courses in epigraphy, comparative grammar, and Greek dialects when they are offered, since the interval between offerings of each is at least three years. The graduate course offerings are varied from year to year so that in a normal period of graduate study students may take courses in several fields and periods. Service for two semesters as a graduate student instructor is normally required as part of the Ph.D. program in Classics. Most seminars are 4 units (for a letter grade) or 2 units (on a satisfactory/unsatisfactory basis), subject to some restrictions. For details of the M.A. and Ph.D. programs, consult the graduate adviser.

Undergraduate Courses

Classics

Courses that do not require a knowledge of Greek or Latin. (Classics 110 is an exception.) Courses in this group are designated Classics 10A, 10B, etc.

Lower Division Courses

10A. Introduction to Greek Civilization. (4) Three hours of lecture and one hour of discussion per week. Study of the major developments, achievements, and influence of Greek culture from the Bronze Age to the fourth century BCE. Key works in literature, history, and philosophy (read in English translation) will be examined in their political and social context, and in relation both to other ancient Mediterranean cultures and to subsequent developments in Western civilization. (F)

10B. Introduction to Roman Civilization. (4) Three hours of lecture per week; one hour of discussion may be added. Investigation of the main achievements and
tensions in Roman culture from Romulus to the High Empire. Key sources for literature, history, and material culture are read in order to reveal Roman civilization's historical and social context. All materials are read in English. (F,SP)

17A. Introduction to the Archaeology of the Greek World. (4) Three hours of lecture and one hour of discussion per week. The physical remains of the Greek world from the Bronze Age to 323 BCE will be studied, with emphasis on important sites such as the Acropolis of Athens, as a means of understanding the culture of ancient Greece. (F)

17B. Introduction to the Archaeology of the Late Greek and Roman World. (4) Three hours of lecture and one hour of discussion per week. Prerequisites: 17A is not prerequisite to 17B. The physical remains of the Hellenistic and Roman worlds from 323 BCE to the advent of Christianity will be studied as a means of understanding the culture of ancient Rome. (SP)

24. Freshman Seminars. (1) Course may be repeated for credit as topic varies. One hour of seminar per week. Sections 1-8 to be graded on a letter-grade basis. Sections 9-16 to be graded on a passed/not passed basis. The Berkeley Seminar Program has been designed to provide new students with the opportunity to explore an intellectual topic with a faculty member in a small-seminar setting. Berkeley Seminars are offered in all campus departments, and topics vary from department to department and semester to semester. (F,SP)

28. The Classic Myths. (4) Three hours of lecture and one hour of discussion per week. A study of Greek and Roman myths with emphasis on the universal meanings of myths. The interaction of myths, religion and philosophy as a source of understanding of ancient and present cultures. (F,SP)

29. Introduction to Greco-Roman Magic. (3) Three hours of lecture per week. Study of magical practices in the Greek and Roman worlds during the historical period (c. 750 BCE through 500 CE) as attested in literary, epigraphic, and papyrological sources. Attention is paid to the overall Mediterranean context and, in particular, Egyptian and Near Eastern influences on Greco-Roman traditions. Consideration is given to ways of analyzing and understanding magical practices, and the relationship between magic, religion, philosophy, and science. (F,SP)

34. Epic Poetry: Homer and Vergil. (4) Three hours of lecture per week. A discussion section may be added. Greek and Roman epics including the Iliad, Odyssey, Aeneid. (F,SP)

35. Greek Tragedy. (4) Three hours of lecture/discussion per week. Greek tragedy with readings of Aeschylus, Sophocles, and Euripides. (F,SP)

36. Greek Philosophy. (4) Three hours of lecture per week. Prerequisites: 2, 10, or 15. Largely independent study for one unit. Enrollment limited to 15 sophomores. (F,SP)

98. Directed Group Study for Freshmen and Sophomores. (1-4) Enrollment is restricted; see the Introduction to Courses and Curricula section of this catalog. Must be taken on a passed/not passed basis. Prerequisites: Restricted to freshmen and sophomores; consent of instructor; 3.3 overall GPA. (F,SP)

99. Supervised Independent Study and Research. (1-4) Enrollment is restricted; see the Introduction to Courses and Curricula section of this catalog. Must be taken on a passed/not passed basis. Prerequisites: Restricted to upper-division students. (F,SP)

100A. Greek Literature. (4) Three hours of lecture per week. Readings in Greek writers at the upper division level. (F)

100B. Latin Literature. (4) Three hours of lecture per week. Readings in Latin writers at the upper division level. (SP)

101. Homer. (4) Three hours of lecture per week. Prerequisites: Greek 2. 10. The principles of ancient metre of all types. (F,SP)

102. Drama and Society. (4) Three hours of lecture per week. Prerequisites: 100. Formerly Greek 103. Study of topics in gender, feminism, and sexuality in Homer, the Greek theatre, and ancient historiography. (SP)

104. Epic Poetry: Homer and Vergil. (4) Three hours of lecture per week. An introduction to Homeric epic poetry with readings from the Greek and Latin epics. (F,SP)

106. Greek Vase Painting. (4) Three hours of lecture/discussion per week. Study of Greek vase painting from the Archaic to the Hellenistic period. Topics vary from year to year. Prerequisites: Consent of instructor. (SP)

110. Ancient Metrics. (2) Two hours of lecture per week. Prerequisites: Greek 2 or 10. The principles of ancient metre of all types. (F,SP)

111. Ancient Religion. (4) Course may be repeated with consent of instructor as topic varies. Three hours of lecture per week. Topics may include study of the worship of gods in the ancient Greek world; cult practices and religious ideas; history and development of Roman religion. (SP)

113. Topics in Ancient Greek and Roman Religion. (4) Course may be repeated for credit. Three hours of lecture per week. Prerequisites: Upper division status. Topic to vary from year to year. Prerequisites: Restricted to freshmen and sophomores; consent of instructor; 3.3 overall GPA. (F,SP)

116. Gender, Sexuality, and Culture in the Ancient World. (4) Course may be repeated for credit as topic varies. Three hours of lecture/discussion per week. Study of topics in gender, feminism, and sexuality in ancient cultures. Topics vary from year to year. (F,SP)

117. Themes in Greek Philosophy. (4) Course may be repeated with consent of instructor. Three hours of lecture per week. Prerequisites: 36 or Philosophy 26A or consent of instructor. The course is designed to deal with a single topic or selection of topics in Greek philosophy studied in translation. Possible topics are: the close study of one or more of Plato's or Aristotle's texts, Hellenistic philosophy, neo-Platonism. (F,SP)

120. Ancient Athletics. (4) Three hours of lecture per week. Prerequisites: Consent of instructor. Topics include origin and development of ancient athletics, history and development of physical education in ancient Greece and Rome. (SP)

120A. Ancient Athletics. (4) Three hours of lecture per week. Study of ancient athletics and the role of athletics in Greek and Roman society. (F,SP)

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Greek

Courses in this group are designated Greek 1, 2, etc.

Lower Division Courses

1. Elementary Greek. (4) Three hours of lecture per week. Beginners' course. (F,SP)

2. Elementary Greek. (4) Three hours of lecture per week. Prerequisites: 1 or equivalent Beginners' course. (F,SP)

10. Intensive Elementary Greek. (8) Five hours of lecture per week. Beginners' course (intensive); equivalent to Greek 1-2. (SP)

10. Intermediate Greek Prose Composition. (4) Three hours of lecture per week. Prerequisites: 2, 10, or 15. Formerly Greek 40A. Development of skills in writing Attic prose and sight reading; grammar review. (F)

98. Directed Group Study for Freshmen and Sophomores. (1-4) Enrollment is restricted; see the Introduction to Courses and Curricula section of this catalog. Must be taken on a passed/not passed basis. Prerequisites: Restricted to freshmen and sophomores; consent of instructor; 3.3 overall GPA. (F,SP)

99. Supervised Independent Study and Research. (1-4) Course may be repeated for credit. Enrollment is restricted; see the Introduction to Courses and Curricula section of this catalog. Must be taken on a passed/not passed basis. Prerequisites: Restricted to upper-division students. (F,SP)

Upper Division Courses

100. Plato and Attic Prose. (4) Three hours of lecture per week. Prerequisites: 2, 10, or 15. Readings from Plato's Apology or Crito, and from other Attic prose authors (e.g., Xenophon, Lysias); some review of grammar. (F)

101. Homer. (4) Three hours of lecture per week. Prerequisites: 1-2, 10, or 15. Selected readings in the Iliad or Odyssey. (SP)

102. Drama and Society. (4) Three hours of lecture per week. Prerequisites: 100. Formerly Greek 103. Reading of one Greek tragedy, and of further selections from the dramatists and/or prose literature of fifth century Athens. (F)
105. The Greek New Testament. (4) Three hours of lecture per week. Prerequisites: 100. Formerly 125. Readings in the Gospels and/or Acts and/or Epistles.

115. Archaic Poetry. (4) Course may be repeated for credit with consent of instructor. Three hours of lecture per week. Prerequisites: Greek 101 or 102. Readings in various Greek poets.

116. Greek Drama. (4) Course may be repeated for credit with consent of instructor. Three hours of lecture per week. Prerequisites: Greek 101 or 102. Selected readings from Greek tragedy and/or comedy.

117. Hellenistic Poets. (4) Course may be repeated for credit with consent of instructor. Three hours of lecture per week. Prerequisites: Greek 101 or 102. Readings in various Hellenistic poets.

120. Herodotus. (4) Course may be repeated for credit with consent of instructor. Three hours of lecture per week. Prerequisites: Greek 100 and either 101 or 102 or 105. Readings in Herodotus.

121. Thucydides. (4) Course may be repeated for credit with consent of instructor. Three hours of lecture per week. Prerequisites: Greek 100 and either 101 or 102 or 105. Readings in Thucydides.

122. Attic Oratory. (4) Course may be repeated for credit with consent of instructor. Three hours of lecture per week. Prerequisites: Greek 100 or 101 or 102 or 105. Readings in oratory.

123. Plato and Aristotle. (4) Course may be repeated for credit with consent of instructor. Three hours of lecture per week. Prerequisites: Greek 100 and either 101 or 102 or 105. Readings in Plato and Aristotle.

H195. Honors Course in Greek. (4) Three hours of work per week per unit. Prerequisites: Appropriate language preparation and eligibility for admission to the honors program. Largely independent study for one semester building on work in a previous upper-division course taken in full-time attendance of the Greek major; the work will result in the writing of a thesis, to be evaluated by an honors committee of three members. Written thesis due the Monday of the 13th week of the semester in which the course is taken. (F,SP)

198. Directed Group Study for Advanced Undergraduates. (1-4) Course may be repeated for credit. Enrollment is restricted; see the Introduction to Courses and Curricula section of this catalog. Must be taken on a passed/not passed basis. Prerequisites: Restricted to senior honors students. (F,SP)

199. Supervised Independent Study and Research. (1-4) Course may be repeated for credit. Enrollment is restricted; see the Introduction to Courses and Curricula section of this catalog. Must be taken on a passed/not passed basis. Prerequisites: Restricted to senior honors students. (F,SP)

Latin

Courses in this group are designated Latin 1, 2, 40, etc.

Lower Division Courses

1. Elementary Latin. (4) Three or four hours of lecture per week. Beginners' course. (F,SP)

2. Elementary Latin. (4) Three to four hours of lecture per week. Prerequisites: 1 or equivalent. Beginners' course. (F,SP)

10. Intensive Elementary Latin. (8) Five hours of lecture and one hour of discussion per week. Beginners' course (intensive); equivalent to Latin 1-2. (F-SP)

40. Intermediate Latin Prose Composition. (4) Three hours of lecture per week. Prerequisites: 2, 10, or 15. Formerly Latin 40A. Development of skills in writing Latin prose and sight reading; review of grammar. (SP)

98. Directed Group Study for Freshmen and Sophomores. (1-4) Enrollment is restricted; see the Introduction to Courses and Curricula section of this catalog. Must be taken on a passed/not passed basis.

Prerequisites: Consent of instructor; 3.3 overall GPA; restricted to freshmen and sophomores. (F,SP)

99. Supervised Independent Study and Research. (1-4) Enrollment is restricted; see the Introduction to Courses and Curricula section of this catalog. Must be taken on a passed/not passed basis. Prerequisites: Consent of instructor and 3.3 overall GPA; restricted to freshmen and sophomores. (F,SP)

Upper Division Courses

100. Republican Prose. (4) Three hours of lecture per week. Prerequisites: 2, 10, or 15. Selected readings in Caesar, Sallust, and Cicero; some review of grammar. (F,SP)

101. Vergil. (4) Three hours of lecture per week. Prerequisites: 100. Selected readings from Vergil. (F,SP)

102. Lyric and Society. (4) Three hours of lecture per week. Prerequisites: 100. Reading in Catullus and Horace, and of short selections from prose literature of their periods. (SP)

115. Roman Drama. (4) Course may be repeated for credit with consent of instructor. Three hours of lecture per week. Prerequisites: 101 or 102. Readings in Comedy (Plautus and Terence) and Tragedy (Seneca).

116. Lucretius, Vergil’s Georgics. (4) Course may be repeated for credit with consent of instructor. Three hours of lecture per week. Prerequisites: 101 or 102. Readings in the De Rerum Natura and the Georgics.

117. Eleigiac Poetry. (4) Course may be repeated for credit with consent of instructor. Three hours of lecture per week. Prerequisites: 101 or 102. Readings in Latin satirists.

119. Latin Epic. (4) Course may be repeated for credit. Three hours of lecture per week. Prerequisites: 101 or 102. Readings in Latin epic poetry.

120. Latin Prose to AD 14. (4) Course may be repeated for credit with consent of instructor. Three hours of lecture per week. Prerequisites: 100 and either 101 or 102 or 140. Readings in Latin prose authors such as Sallust, Cicero, Caesar, and Livy.

121. Tacitus. (4) Course may be repeated for credit with consent of instructor. Three hours of lecture per week. Prerequisites: 100 and either 101 or 102 or 140. Readings in Tacitus.

122. Post-Augustan Prose. (4) Course may be repeated for credit with consent of instructor. Three hours of lecture per week. Prerequisites: 100 or 101 or 102 or 140. Readings in Latin prose, authors such as Sallust, Cicero, Caesar, and Livy.

123. Petronius and Apuleius. (4) Course may be repeated for credit with consent of instructor. Three hours of lecture per week. Prerequisites: 100 and either 101 or 102 or 140. Readings in Petronius and Apuleius.

140. Medieval Latin. (4) Three hours of lecture per week. Prerequisites: 100. Introduction to medieval Latin: Readings in prose and poetry from Cassiodorus to the Italian Renaissance, with emphasis on certain periods.

C140. Medieval Latin. (4) Three hours of lecture per week. Prerequisites: 100 or consent of instructor. Introduction to Medieval Latin: Selected readings in prose and poetry from Late Antiquity to the end of the Middle Ages, with attention to the special characteristics of the Latin language during this period. Also listed as Medieval Studies C140. (F,SP)

15SA-15SB. Readings in Medieval Latin. (4-4) Course may be repeated for credit. Three hours of lecture per week. Prerequisites: 100 or 101 or 102 or 140, or consent of instructor. Study of texts selected from the early, high, or late medieval periods.

A. Focuses on prose.
B. Focuses on the poetic tradition.

H195. Honors Course in Latin. (4) Three hours of lecture per week per unit. Prerequisites: Appropriate language preparation and eligibility for admission to the honors program. Largely independent study for one semester building on work in a previous upper-division course used in fulfillment of the Latin major; the work will result in the writing of a thesis, to be evaluated by an honors committee of three members. Written thesis due the Monday of the 13th week of the semester in which the course is taken. (F,SP)

198. Directed Group Study for Advanced Undergraduates. (1-4) Course may be repeated for credit. Enrollment is restricted; see the Introduction to Courses and Curricula section of this catalog. Must be taken on a passed/not passed basis. Prerequisites: Restricted to senior honor students. (F,SP)

Graduate Courses

Classics

The seminar (Classics 200) is prerequisite to all graduate seminars; this requirement does not apply to graduate courses that are not seminars proper (namely, Classics 21A-21B, 22A-22B, 222, 223, 250, 260), and it may be waived only with special permission of the graduate adviser.

Courses vary from year to year and are not necessarily given in alternate years.

200. Proseminar. (4) Three hours of seminar per week. An introduction to the general literature of classical philology, to methods of research, and to textual criticism. (F)

201A-201B. Survey of Greek Literature. (4) Three hours of lecture per week. A sequence of readings and lectures on Greek literature. Offered alternate years. (F,SP)

202A-202B. Survey of Latin Literature. (4) Three hours of lecture per week. A sequence of readings and lectures on Latin literature. Offered alternate years. (F,SP)

203. Approaches to Classical Literature. (4) Three hours of seminar per week. Prerequisites: 200 or consent of instructor. Introduction to basic methods of literary analysis and interpretation, and study of particular critical approaches of significance for the understanding of Classical literature. Close reading of selected passages of Greek and Latin will be emphasized. The critical approaches that are to be studied may vary from year to year. The course will be team taught. (F)

204. Proseminar in Classical Archaeology. (2-4) Three hours of seminar per week. A course to lay the foundations for an understanding of the discipline, its history and evolution, and the bibliography and research tools that are fundamental to Classical Archaeology. Subject areas include, but are not restricted to: archaeological methodology, the major sites, history, iconography, architecture, sculpture, painting, topography, epigraphy, gemmology, numismatics. (F,SP)

C204. Proseminar in Classical Archaeology and Ancient Art. (4) Three hours of seminar per week. This seminar is intended to introduce graduate students—both archaeologists and non-archaeologists—to the discipline of classical archaeology, history, and evolution, and its research tools and bibliography. Since it is both impossible and undesirable to attempt to cover the entire discipline in one semester, after two introductory lectures on the history of the field, we will address a selection of topics that seem representative of its concerns. Also listed as History of Art C204. (SP) Hallett, Stewart
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210. Greek Hexameter Poetry. (2,4) Course may be repeated for credit as topic varies. Three hours of seminar per week. Two units to be graded on a satisfactory/unsatisfactory basis.

211. Archai Greek Poetry. (2,4) Course may be repeated for credit as topic varies. Three hours of seminar per week. Two units to be graded on a satisfactory/unsatisfactory basis.

212. Aristophanes. (2,4) Course may be repeated for credit as topic varies. Three hours of seminar per week. Two units to be graded on a satisfactory/unsatisfactory basis.

213. Hellenistic Poetry. (2,4) Course may be repeated for credit as topic varies. Three hours of seminar per week. Two units to be graded on a satisfactory/unsatisfactory basis.

214. Greek Drama. (2,4) Course may be repeated for credit as topic varies. Three hours of seminar per week. Two units to be graded on a satisfactory/unsatisfactory basis.

215A-E. Study of Greek novelists, satisfactory/unsatisfactory basis. Four units to be graded on a letter-grade basis. Prerequisites: 200. Formerly 210E. Study of Callimachus, Theocritus, Apollonius, or other topics in Hellenistic poetry and poetics.

216. Greek Philosophers. (2,4) Course may be repeated for credit as topic varies. Three hours of seminar per week. Two units to be graded on a satisfactory/unsatisfactory basis. Prerequisites: 200. Study of PreSocratics, Plato, Aristotle, Hellenistic Philosophy, or other topics in ancient Greek philosophy through Plotinus. (F,SP)

217. Ancient Novels. (2,4) Course may be repeated for credit as topic varies. Three hours of seminar per week. Two units to be graded on a satisfactory/unsatisfactory basis. Prerequisites: 200. Study of Aeschylus, Sophocles, Euripides, Aristophanes, Menander, or other topics in Greek drama and dramatic theory.

218. Greek Philosophy. (2,4) Course may be repeated for credit as topic varies. Three hours of seminar per week. Two units to be graded on a satisfactory/unsatisfactory basis. Prerequisites: 200. Study of PreSocratics, Plato, Aristotle, Hellenistic Philosophy, or other topics in ancient Greek philosophy through Plotinus. (F,SP)

220A-220B. Greek and Latin Epigraphy. (2,4,2,4) Three hours of lecture per week. Two units to be graded on a satisfactory/unsatisfactory basis. Four units to be graded on a letter-graded basis. Prerequisites: 200. A Greek epigraphy B. Latin epigraphy

222. Comparative and Historical Grammar of Greek. (2,4) Three hours of seminar per week. Two units to be graded on a satisfactory/unsatisfactory basis. Four units to be graded on a letter-grade basis. Prerequisites: Greek 101 and 102 or graduate standing. Survey of the evolution of Greek from its reconstructed ancestor, Proto-Indo-European, through its dialects as attested in antiquity. The development of Greek phonology, morphology, and syntax will be examined, and linguistic characteristics of a few literary and epigraphic dialects will be compared.

223. Comparative and Historical Grammar of Latin. (2,4) Three hours of seminar per week. Two units to be graded on a satisfactory/unsatisfactory basis. Four units to be graded on a letter-grade basis. Prerequisites: Latin 101 and 102 or graduate standing. Survey of the evolution of Latin from its reconstructed ancestor, Proto-Indo-European, as attested in antiquity. The development of Latin phonology, morphology, and syntax will be examined, and the linguistic characteristics of a few literary and epigraphic examples will be compared.

225. Papyrology. (4) Course may be repeated for credit. Three hours of lecture per week. The course introduces students to Greek papyrology. Its principal aim is to develop the skills necessary to edit and interpret papyrological texts. Sessions are devoted to learning the techniques of papyrology and to gaining historical perspective to which the papyrological corpus has much to contribute (the ancient economy, gender in antiquity, education, etc.). Extensive use will be made of Berkeley’s outstanding collection of papyri from Tebtunis.

226. Myth and Literature. (2,4) Course may be repeated for credit as topic varies. Three hours of seminar per week. Two units to be graded on a satisfactory/unsatisfactory basis. Four units to be graded on a letter-grade basis. Prerequisites: 200. A study of the interplay of mythical thinking and formal literary expression in texts of all kinds in the Greek-Roman world.

227. Ancient Society and Law. (2,4) Course may be repeated for credit as topic varies. Three hours of seminar per week. Two units to be graded on a satisfactory/unsatisfactory basis. Four units to be graded on a letter-grade basis. Prerequisites: 200. Formerly 238. Study of social, legal, or administrative structures of the Greek or Roman world.

230. Latin Poetry of the Republic and Early Empire. (2,4) Course may be repeated for credit as topic varies. Three hours of seminar per week. Two units to be graded on a satisfactory/unsatisfactory basis. Four units to be graded on a letter-grade basis. Prerequisites: 200. Formerly 237A. Study of Cicero, Seneca, or other topics in the history of Roman philosophy.

239. Topics in Roman Literature, History, and Culture. (2,4) Course may be repeated for credit as topic varies. Three hours of seminar per week. Two units to be graded on a satisfactory/unsatisfactory basis. Four units to be graded on a letter-grade basis. Prerequisites: 200. Formerly 245A-B. Topics in Latin literature from the period 500-1300.

250. Advanced Greek Composition. (4) Course may be repeated for credit. Three hours of lecture per week. Prerequisites: Greek 40 or equivalent. Advanced instruction in the writing of Greek prose.

250. Advanced Latin Composition. (4) Course may be repeated for credit. Three hours of lecture per week. Prerequisites: Latin 40 or equivalent. Advanced instruction in the writing of Latin prose.

270. Seminar in Classical Archaeology. (2,4) Course may be repeated for credit as topic varies. Three hours of lecture per week. Two units to be graded on a satisfactory/unsatisfactory basis. Four units to be graded on a letter-grade basis. Advanced study of ancient Greek art objects and sites.

275. Pan-Hellenism and Nemea. (2,4) Course may be repeated for credit as topic varies. Three hours of lecture per week. Two units to be graded on a satisfactory/unsatisfactory basis. Course may be repeated for a maximum of 15 units. Supervised study in archaeology.

277. Field Study in Archaeology. (2,12) Course may be repeated for credit as topic varies. Three hours of field study per week. Minimum of 15 units. Supervised study in archaeology.

281. Special Study. (2-8) Course may be repeated for credit. Prerequisites: Completion of qualifying examination for the Ph.D. degree. Normally reserved for students writing the doctoral dissertation.

289. Special Study. (1-4) Course may be repeated for credit. Special individual study for qualified graduate students. (F,SP)

601. Individual Study for Master’s Candidates. (1-12) Course may be repeated for credit. Must be taken on a satisfactory/unsatisfactory basis. Individual study for the comprehensive or language requirements in conjunction with the graduate adviser or personal adviser. Units may not be used to meet either unit or residence requirements for a master’s degree. (F,SP)

602. Individual Study for Doctoral Candidates. (1-12) Course may be repeated for credit. Must be taken on a satisfactory/unsatisfactory basis. Individual study in consultation with the graduate adviser or personal adviser, intended to provide an opportunity for qualified students to prepare themselves for the various examinations required of candidates for the Ph.D. May not be used for unit or residence requirements for the doctoral degree. (F,SP)

Professional Courses

300. Teaching of Classics: Methods and Problems. (3) Course may be repeated for credit. Four 2-hour seminars per term plus individual conferences. Must be taken on a satisfactory/unsatisfactory basis. Prerequisites: Graduate standing. Seminar in problems of teaching. Required for all new graduate student instructors. (F,SP)

302. Teaching Practicum. (3-6) Course may be repeated for credit. Must be taken on a satisfactory/un- satisfactory basis. Prerequisites: Graduate standing. Supervised teaching of lower division Latin courses or of discussion sections in Classics. Two semesters normally required for Ph.D. candidates. (F,SP)

Cognitive Science

(College of Letters and Science)

Group Major Office: Undergraduate and Interdisciplinary Studies, 301 Campbell, (510) 642-2928 is.berkeley.edu/ugis/cogsci

Director
John Kilgarron (Psychology)

Faculty Members
Dor Abrahamson (Education)
Maneesh Agrawala (Computer Science)
Martin Banks (Optometry)
Roy L. Caldwell (Integrative Biology)
John Campbell (Philosophy)
Jose M. Carmona (Cognitive Science and Electrical Engineering)
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John Searle (Philosophy)
Arthur Shimamura (Psychology)
Dan Slobin (Psychology)
Eve Sweetser (Linguistics/Celtic Studies)
Robert Wilensky (Computer Science)
Robb Wiener (Sociology)
Lori Zedek (Psychology)

Student Affairs Officer: Ms. Snow.

Ms. Snow.
Group Major in Cognitive Science

Cognitive science is the cross-disciplinary study of the structure and processes of human cognition and their computational simulation or modeling. This interdisciplinary program is designed to give students an understanding of questions dealing with human cognition, such as concept formation, visual perception, the acquisition and processing of natural language, and human reasoning and problem solving.

The program draws on relevant courses found within the fields of anthropology, biology, computer science, education, linguistics, philosophy, and psychology, as well as specially designed lower and upper division courses in cognitive science. The structure of the major follows:

**Prerequisites for the Major:**

Cognitive Science C1/Education C1, Computer Science 61A, and one of the following: Mathematics 55 or Computer Science 70.

**Lower Division Requirements:** Mathematics 1A or 16A, Molecular and Cell Biology 61 or 64.

**Upper Division Core Requirements:**

Cognitive Science C100/Psychology C120 and Cognitive Science C101/Linguistics C105.

In addition to the two core courses required of all majors, students electing to fulfill one of the following: Mathematics 55 or Computer Science 61A, and one of the following: Mathematics 55 or Computer Science 70.

**Cognitive Neuroscience.**

Students concentrating in Cognitive Neuroscience must take Psychology 117 or Psychology/Cognitive Science C127; one course from the following: Molecular and Cell Biology 106, 163, or Integrative Biology 245/245L, and a third course. Additional courses include: Psychology 110, 111, 112, 114, 117, Cognitive Science/Psychology C127, Molecular and Cell Biology 160, 163, 164, 160L, 185, 186, Cognitive Science C110/Computer Science C150/Linguistics C109. Students not concentrating in Cognitive Psychology must take Psychology 117 or Psychology/Cognitive Science C127.

**Cognitive Psychology.**

Students concentrating in Cognitive Psychology must take Psychology 101; one from the following: Computer Science 188 or Computer Science 131/Psychology C123; and one course from the following list: Cognitive Science C102, Cognitive Science C124, Psychology/Cognitive Science C126, Psychology C128/Cognitive Science C102, Psychology 164, and a third course. Additional courses include: Psychology 107, 111, 112, 121, Psychology/Cognitive Science C127, Psychology 142, Music 108, Education 224A, 227, 229A. Students not concentrating in Cognitive Psychology must take a course from the core courses list.

**Computational Modeling.**

Students concentrating in Computational Modeling must take Computer Science 188 or Cognitive Science C131/Psychology C123 and two courses from the following list: Cognitive Science C102, Cognitive Science C124, Computer Science 161B, Computer Science 182/Cognitive Science C101/Linguistics C109, Computer Science 160, 170, 186, 280, 281, 287, 288, 289. Students not concentrating in Computational Modeling must take one course from the following: Computer Science 188 or Cognitive Science C131/Psychology C123.

**Linguistics.**

Students concentrating in Linguistics must take Linguistics 100; either Linguistics 110 or 120, and a third course. Additional courses include Linguistics C104/Cognitive Science C104, Linguistics/Cognitive Science C102, Linguistics/Cognitive Science C108, Linguistics/Cognitive Science C110/Computer Science C182. Linguistics 115, 121, 123, 158, 181, Psychology/Cognitive Science C124. Students not concentrating in Linguistics must take Linguistics 100. Philosophy. Students concentrating in Philosophy must take Philosophy 132 and two other courses, at least one of which must come from the core list: Philosophy 100, 122, 131, 132, 133, 135, 136. Additional courses include: Philosophy 129, 130, 140, 174, 175, 176, 178, 185, 186, 188, Cognitive Science/Linguistics C108. Students not concentrating in Philosophy must take a course from the core courses list.

**General Track.**

Students who elect not to follow a specific concentration may take core courses and electives as follows: from Cognitive Neuroscience, Psychology 117 or Psychology C127/Cognitive Science C101, and one course from the following: Psychology 122, Psychology C124/Cognitive Science C124, Psychology C126/Cognitive Science C126, Psychology C128/Cognitive Science C102, Psychology 143, Psychology 164; from Computational Modeling, Computer Science 188, or Cognitive Science C131/Psychology C123, from Linguistics, Linguistics 100; from Philosophy, Philosophy 122, 131, 132, 133, 135, or 136.

Students in the general track may complete their 30 upper division units with at least two additional courses from core concentrations. They may also include Cognitive Science C103/Information Systems C103/Mass Communications C103.

**Honors Program.**

Cognitive science majors who wish to graduate with honors must have an overall grade point average of higher than 3.0 in all work completed in the University and a 3.0 grade-point average or higher in the major program at the time of their graduation. In addition, they must complete a thesis or honors project, based upon an independent study with a member of the Cognitive Science faculty and marked by satisfactory completion of at least 3 units of course H195A-H195B or 199.

Students interested in the major should consult with the student affairs officer in 359 Campbell Hall, (510) 642-2628.

**Upper Division Courses**

C1. Introduction to Cognitive Science. (4)

Three hours of lecture and two hours of laboratory per week. Formerly 1. This course introduces the interdisciplinary field of cognitive science. Lectures and readings will survey research from artificial intelligence, psychology, linguistics, philosophy, and neuroscience, and will cover topics such as knowledge, thinking, remembering, vision, imagery, language, and consciousness. Sections will demonstrate some of the major methodologies. Also listed as Education C1. (F,SP)

84. Sophomore Seminar. (1,2)

Course may be repeated for credit as topic varies. One hour of seminar per week per unit for 15 weeks. One and one-half hours of seminar per week for 10 units. Two hours of seminar per week per unit for eight weeks. Three hours of seminar per week per unit for five weeks. Sections 1-2 to be graded on a passed/not passed basis. Sections 3-4 to be graded on a letter-grade basis. Prerequisites: At discretion of instructor. Sophomore seminars are small interactive courses offered for faculty members in departments across the campus. Sophomore seminars offer opportunity for close, regular intellectual contact between faculty members and students in the crucial second year. The topics vary from department to department and semester to semester. Enrollment limited to 15 sophomores.

98. Directed Group Study. (1-4)

Course may be repeated for credit. Enrollment is restricted; see the introduction to Courses and Curricula section of this catalog. One or two directed group study per week. Must be taken on a passed/not passed basis. Seminar for the group study of selected topics. Topics may be initiated by students subject to the approval of the major advisor. (F,SP)

**Upper Division Courses**

C100. Basic Issues in Cognition. (3) Students will receive no credit for C100 after taking Psychology 120A. Two hours of lecture and one hour of discussion per week. Theoretical foundations and current controversies in the field of cognitive science. Basic issues in cognition—including perception, imagery, memory, categorization, thinking, judgment, and development—will be considered from the perspectives of philosophy, psychology, and physiology. Particular emphasis will be placed on the nature, implications, and limitations of the computational model of mind. Also listed as Psychology C120. (F)

C101. The Mind and Language. (4) Three hours of lecture per week. Prerequisites: C1 or Psychology C127; one or Psychology C120. This course will examine the nature of human consciousness from the interdisciplinary perspective of cognitive science. It will cover topics from the philosophy of mind, cognitive science, linguistics, psychology, and computer models. Also listed as Psychology C129. J. Kilstrom

C103. History of Information. (3) Three hours of lecture per week. Prerequisites: Upper level undergraduates. This course explores the history of information and associated technologies, uncovering why we think of ours as “the information age.” We will select moments in the evolution of production, recording, and storage from the earliest writing systems to the world of Short Message Service. In every instance, we’ll be concerned with both what and when and how and why, and we will keep returning to the question of technological determinism: how do technology and social change cause or shape the development of consciousness versus? Also listed as Mass Communications C103 and Information C103. (F) Duguid, Nunberg

C104. The Mind, Language, and Politics. (4) Three hours of lecture and one hour of discussion per week. Prerequisites: Linguistics C105, or courses on politics and related fields. An exploration of the liberal and conservative thought and language, in terms of the basic mechanisms of mind: frames, prototypes, radial categories, contested concepts, conceptual metaphor, and conservative thought and language, in terms of the political discourse. The logic of political thought. The purpose of the course is to provide students interested in political and social issues with the tools to analyze the framing of, and logic behind, contemporary political discourse. Also listed as Linguistics C104. G. Lakoff

C107. The Mind and Mathematics. (4) Three hours of lecture and one hour of discussion per week. Prerequisites: Some background in either cognitive science, mathematics, philosophy, linguistics, or another related discipline. The relevance of mathematical ideas from the perspective of cognitive science. How ordinary mechanisms of mind (e.g., conceptual metaphor and blending) characterize laws of arithmetic, sets, geometry, and the complex plane. Formal number systems. The Basic Metaphor of Infinity and its application to infinite sets, points at infinity, infinitesimals, transfinite numbers, and limits. The meaning of Euler’s equation e^{iπ} = -1. Why mathematics is an objective feature of the universe. Also listed as Linguistics C107. G. Lakoff

C108. The Challenge of Cognitive Science to Western Philosophy. (4) Three hours of lecture/discussion per week. Prerequisites: Some background in either cognitive science or philosophy. Three major results of cognitive science are inconsistent with most of Western philosophy: the embodiment of the mind, the cognitive unconscious, and metaphorical thought. The course
rethinks philosophy from a cognitive science per-
spective, including basic philosophical concepts—time
events, causation, the mind, the self, and morality—
and the cognitive appraisal of philosophical theories of
the Presocratics, Plato, Aristotle, Descartes, Kant,
analytic philosophy (especially Quine), and Chomsky.
Also listed as Linguistics C108. G. Lakoff

C110. The Neurological Basis of Thought and Language. (4)
Three hours of lecture and one hour of discussion per
week. Prerequisites: Computer Science C101, Linguistics C105 or C100, Psychology C120B; or consent of instructor. This is a course on the current status of interdisciplinary studies that seeks to answer the following questions: (1) How is it possible for the human brain, which is a highly structured net-
work of neurons, to think and to learn, use, and understand language? (2) How are language and thought related to perception, motor control, and our other neural sys-
tems, including executive control, and emotion. Also listed as Psychology C124.

C124. Psycholinguistics. (3) Two hours of lecture and one hour of discussion per week. Prerequisites: An introductory course in linguistics or consent of instructor. Introduction to psycholinguistics, emphasizing effects of psychological variables on the learning and use of language, influence of language behavior on psychological processes, special attention to the cognitive and neurological basis of modern linguistic theory and to social psychological aspects of language behavior. Also listed as Psychology C125.

C125. Cognition and Neuroscience. (3) Two hours of lec-
ture and one hour of discussion per week. Prerequisites: 110 or 120, or Cognitive Science C100 recommended. This course will examine research investigating the neurological basis of cognition. Material covered will include the study of brain-injured patients, neurophys-

ological research in animals, and the study of normal cognitive processes in humans with non-invasive beha-
vioral and physiological techniques such as functional Magnetic Resonance Imaging (fMRI), elec-
troencephalography (EEG), and transcranial magnetic stimulation (TMS). Topics to be covered include
perception, attention, memory, language, motor control, executive control, and emotion. Also listed as Psychology C127.

C131. Computational Models of Cognition. (4) Three hours of lecture and one hour of discussion per week. Prerequisites: Calculus, discrete mathematics, C1, Computer Science 61A, or equivalents. This course will provide advanced students in cognitive science and computer science with the skills to develop computational models of human cognition, giving in-
sight into how people solve challenging computational problems, as well as how to bring computers closer to human performance. The course will explore three ways in which researchers have attempted to formalize cognition—symbolic approaches, neural net-
works, and probabilistic and statistical—considering the strengths and weaknesses of each. Also listed as Psychology C123. (SP) Griffiths

H195A-H195B. Special Study for Honors Candiates. (1-3) Course may be repeated for a max-
imum of 6 units. Individual conferences. Prerequisites: Open only to senior cognitive science majors in the honors program. Independent study and preparation of an honors thesis under the supervision of a faculty member. (F,SP) Staff

198. Directed Group Study. (1-4) Course may be re-
peated for credit. Must be taken on a passed/not passed basis. Prerequisites: Upper division standing and consent of instructor. Course will include study of selected topics. Topics may be initiated by students subject to the approval of the major advisor. (F,SP)

199. Supervised Independent Study. (1-4) Course may be repeated for credit. Must be taken on a passed/not passed basis. Prerequisites: Restricted to juniors and seniors. Independent study and research by arrangement with faculty. (F,SP) Staff

Graduate Courses

201. Seminar Graduate in the Mind and Language. (4) Four hours of seminar per week. Prerequisites: Graduate standing or consent of instructor. Thought appears to be grounded in the sensorimotor system, and to grow out of the nature of the physical brain and body; human reason also makes extensive and funda-
mental use of imaginative mechanisms such as metaphor and metonymy. The readings in this course review that evidence, much of which comes from the study of how people categorize and reason using cat-
egories. The course will include both discussions and research projects appropriate to students in each of the disciplines. (SP)

237A-237B. Cognitive Science Graduate Seminar. (1-1) One hour of seminar format. Must be taken on a satisfactory/unsatisfactory basis. Prerequisites: Consent of instructor. Weekly presentations by local and visiting researchers on topics in Cognitive Science, with ensuing discussion. (F,SP)

Professional Courses

300. Teaching Cognitive Science. (1-2) Course may be repeated for credit. Seminar format. Must be taken on a satisfactory/unsatisfactory basis. This course will provide training in a variety of teaching techniques, will review relevant pedagogical issues, and will assist under-
graduates in mastering their initial teaching experiences. (F,SP)

College Writing Programs

(College of Letters and Science)

Office: 112 Wheeler Hall, (510) 642-5570
writing.berkeley.edu

Lecturers

Michelle Baptiste, M.A.
Stephanie Bobo, M.A.
Yuet-Sim D. Chiang, Ph.D.
Katherine V. Snyder, Ph.D. (Director)
Jane Stanley, Ph.D. (Assistant Director)
Patricia J. Steenland, Ph.D.
Jon Lang, Ph.D.
M. A. T. E. T. Staff

Catherine J. Oakes, M.F.A.
Catherine J. Oakes, M.F.A.

Melinda B. Erickson, M.A.
Carolene Guti, M.F.A.
Carolyn Hil, Ph.D.
Jan Leng, Ph.D.
Michael Larkin, M.F.A.
John Levine, M.F.A.
Catherine J. Oakes, M.F.A.
Gail Offen-Brown, M.A.

Kathleen V. Snyder, Ph.D. (Director)
Jane Stanley, Ph.D. (Assistant Director)
Patricia J. Steenland, Ph.D.
Stephen K. Tollefson, M.A.
Margi Wald, M.A.

Program Overview

College Writing Programs, a unit within the Under-
graduate Division in the College of Letters and Science, offers courses that instruct students in writing in a variety of contexts. Lower Division Courses

1. Grammar and Vocabulary of Written English. (2) Two hours of lecture/workshop per week. Must be taken on a passed/not passed basis. Prerequisites: Self-selected non-native speakers of English. This course is intended to serve as a course for students who are non-native speakers of English and who wish to work on written English. The purpose of the course is to develop students’ ability to edit their own writing and to identify high frequency non-idiomatic uses of English. Intensive, individualized practice will be provided for students from different language back-
grounds. (F) Staff

R1A. Accelerated Reading and Composition. (6)
Five hours of lecture/discussion and one hour of work-
shop per week. Prerequisites: Placement by UC An-
alytical Writing Placement Exam. Formerly 1A-1B, an in-
tensive, accelerated course satisfying concurrently the requirements of the UC Entry Level Writing Require-
mant and the first half of Reading and Composition. Placement will include imaginative and reflective writ-
ary texts representative of the range of those encountered in the undergraduate curriculum and will feature authors from diverse social and cultural back-
grounds and perspectives. Instruction will focus on writing a variety of discourse forms and in the revision, editing, and fluency. (F,SP) Staff

R4A. Reading, Composition, and Research. (4)
Three hours of seminar/discussion per week. Prerequisites: Enrollment is limited to students who have satisfied the UC Entry-Level Writing Requirement and the first half of Reading and Composition requirement. This writing seminar satisfies the first half of the Reading and Composition requirement. The course is designed to offer students structured, sustained, and highly articulated practice in the recursive processes entailed in reading, critical analysis, and composing. Students will read five the-
matically related book-length texts, or the equivalent, drawn from a range of genres, in addition to various non-print sources. In response to these materials, they will write short personal essays—works of exposition and argumentation. (F,SP) Staff

R4B. Reading, Composition, and Research. (4)
Three hours of seminar/discussion per week. Prerequisites: Satisfaction of the UC Entry-Level Writing Requirement and the first half of Reading and Composition requirement. This writing seminar satisfies the second half of the Reading and Composition requirement. It is designed to offer students structured, sus-
tained, and highly articulated practice in the recursive processes entailed in reading, critical analysis, and composing. In like manner, the seminar affords stu-
dents guided practice through the stages involved in creating a research paper. Students will write three the-
matically related book-length texts, or the equivalent, drawn from a range of genres, in addition to various non-print sources. In response to these materials, they will write several short personal essays—works of exposition and/or argumentation. Students will also draft a research paper, developing a research question, gathering, evaluating, and syn-
thesizing research information from texts and other primary source materials. Em-
ments of the research process, such as a proposal, an annotated bibliography, an abstract, a "work cited" list, and the like, will be submitted, along with the final research portfolio. Students will write and submit a min-
um of 32 pages of expositional prose during the semester. (F,SP) Staff

10A. Introduction to Public Speaking. (3) Three hours of lecture/discussion per week. This is a strictly intro-
ductive course. It presupposes no formal training of any kind on the part of the students. Emphasis will be on organization and delivery with goals of improving control over speaking habits and enunciation. Part of the intent of the course is to introduce students to the rudiments of the rhetorical theory which lies behind the practice of public speaking. (F,SP) Staff

99. Supervised Independent Study. (1-4) Course may be repeated for credit. Enrollment is restricted; see the Introduction to Courses and Curricula section of this catalog. One to four hours of tutorial per week. Must be taken on a passed/not passed basis. Prerequisites: Consent of instructor; lower division standing. Independent study in topics not covered by reg-
ularly scheduled courses. Student must initiate topic and present a written proposal. (F,SP) Staff

Upper Division Courses

110. Advanced Composition: Challenging Writing. (4)
Four hours of lecture per week. Prerequisites: gallon of reading and composition requirement (1A-1B) or consent of instructor. This writing workshop will offer students an opportunity to write essays and other nonfiction prose that speak both personally and
politically to the issues and audiences they wish to address. The readings will focus on the rhetorical strategies of writers who have used the essay as a cultural form to challenge the norms of the time and place in which they live(e). (SP) Staff

C115. Writing from the Field: The Social Issues of Literacy. (4) Three hours of lecture and two hours of laboratory per week. Prerequisites: Completion of Reading and Composition requirement (1A and 1B) or consent of instructor. This course will survey theories of literacy from a variety of disciplinary perspectives, paying particular attention to theories that emphasize social and political issues related to reading and writing. Students will develop the skills to be an informed citizen in a pluralistic society. (F) Staff

Affiliated Faculty
James C. Bartholomew, Ph.D. (Lawrence Berkeley National Laboratory)
Mina J. Bissell, Ph.D. (Lawrence Berkeley National Laboratory)
Judith Campisi, Ph.D. (Lawrence Berkeley National Laboratory)
Kenneth Downing, Ph.D. (Lawrence Berkeley National Laboratory)
Trudy Forte, Ph.D. (Lawrence Berkeley National Laboratory)
Joe W. Gray, Ph.D. (Lawrence Berkeley National Laboratory)
Bing K. Jap, Ph.D. (Lawrence Berkeley National Laboratory)

Graduate Advisers: Fenyoug Liu, Ph.D.; George Sensabaugh, Ph.D.; Barry Shane, Ph.D.

Program Overview
The interdisciplinary Graduate Group in Comparative Biochemistry administers the Ph.D. and M.A. degrees for students interested in a biochemical and molecular approach to problems in the biological sciences. Students work under the supervision of faculty from diverse disciplines including Molecular and Cell Biology; Nutritional Science and Toxicology; Molecular Plant and Microbial Biology; Chemistry; Environmental Science, Policy, and Management; and research units such as the Chemical Biodynamics Laboratory and Lawrence Berkeley National Laboratory.

For further information, please review the program web site at compbiochem.berkeley.edu.

Graduate Courses

294. Comparative Biochemistry Seminar. (1) Course may be repeated for credit. One hour of seminar per week. Must be taken on a pass/credit basis. Prerequisites: Consent of instructor. This course will provide an overview of the research topics conducted by faculty members of the Graduate Group in Comparative Biochemistry. The lectures will cover a wide range of interdisciplinary research topics reflecting the breadth of the Group. An important goal of this course is to enhance methodological and collaborative interactions between students and faculty of the Graduate Group by increasing awareness of the range of research projects. The course will be conducted in a seminar format and is required for students new to the Group. It is also recommended for advanced students currently in the Group. (F) Staff

299. Graduate Research. (1-12) Course may be repeated for credit. Three hours of research/laboratory per week per unit. Prerequisites: Graduate standing in the Comparative Biochemistry Graduate Group. Graduate student research. (F.S.P) Staff

Comparative Literature

(College of Letters and Science)

complit.berkeley.edu

Chair: Jack Kirsch, Ph.D.

Professors
Robert Alter, Ph.D. Harvard University. Modernism, Hebrew literature, modern and biblical (Near Eastern Studies, Jewish Studies)
Michael André Bernstein, Ph.D. Oxford University. Literary theory, historical and cultural context (French)
Judith Butler, Ph.D. Yale University. Philosophy, social and political thought, feminist theory (Rhetoric)
Anthony J. Cappelletti, Ph.D. Harvard University. Literary theory, Gender studies, Postmodernism (French)
Timothy Hampton, Ph.D. Princeton University. Renaissance literature (French)
Victoria Kahn, Ph.D. Yale University. Renaissance literature, early modern political theory (English)
Chana Kronfeld, Ph.D. University of California, Berkeley. Poetics, literary historiography, Hebrew, Yiddish (Near Eastern Studies, Jewish Studies)

*Professor of the Graduate School
†Recipient of Distinguished Teaching Award

Comparative Literature / 195

Comparative Literature

(College of Letters and Science)

Department Office: 4125 Dwinelle Hall, (510) 642-2712 complit.berkeley.edu

Chair: Eric Neiman, Ph.D.

Professors
Robert Alter, Ph.D. Harvard University. Modernism, Hebrew literature, modern and biblical (Near Eastern Studies, Jewish Studies)
Michael André Bernstein, Ph.D. Oxford University. Literary theory, historical and cultural context (French)
Judith Butler, Ph.D. Yale University. Philosophy, social and political thought, feminist theory (Rhetoric)
Anthony J. Cappelletti, Ph.D. Harvard University. Literary theory, Gender studies, Postmodernism (French)
Timothy Hampton, Ph.D. Princeton University. Renaissance literature (French)
Victoria Kahn, Ph.D. Yale University. Renaissance literature, early modern political theory (English)
Chana Kronfeld, Ph.D. University of California, Berkeley. Poetics, literary historiography, Hebrew, Yiddish (Near Eastern Studies, Jewish Studies)

†Leslie V. Kurke, Ph.D. Princeton University. Greek literature and cultural history (Classics)
Michael Luceny, Ph.D. Princeton University. Modern and cultural studies, gender, sexuality (French)
Francesc R. Massari, Ph.D. Italian literature, Indian literature, Spanish American literature (Spanish and Portuguese)
Barbara Spackman, Ph.D. Yale University. Modern period, gender studies, novel (English)
William S. Anderson (Emeritus), Ph.D. Yale University (Classics)
Cyril Birch (Emeritus), Ph.D. University of London (East Asian Languages and Cultures)
Louise George Club (Emerita), Ph.D., L.H.D. Columbia University (Italian Studies)
Joseph J. Duggan (Emeritus) Ph.D Ohio State University (French)
Ralph J. Hexter (Emeritus) Ph.D. Yale University (Classics)
†Robert P. Hughes (Emeritus), Ph.D. University of California (Near Eastern Literatures)
Eric O. Johannesson (Emeritus), Ph.D. University of California, Berkeley (Comparative Literature)
James T. Monroe (Emeritus) Ph.D. Harvard University (Near Eastern Studies)
Michael N. Nagler (Emeritus), Ph.D. University of California, Berkeley (Classics)

Associate Professors
Karl Britto, Ph.D. Yale University. Francophone literature (French)
Anne-Lise Francois, Ph.D. Princeton University. Modern comparative romanticism (English)
Kathleen McCarthy, Ph.D. Princeton University. Roman literature and culture, comedy (Classics)
Eric Neiman (Chair), Ph.D. University of California, Berkeley. Russian literature and culture (Slavic Languages and Literatures)
Harsha Ram, Ph.D. Yale University. Russian literature, 19th-century literary theory and criticism (Slavic Languages and Literature)
Miriam Sas, Ph.D. Yale University. Modern Japanese, French and English literature, surrealism (Film)
Sophie Vaill, Ph.D. Harvard University. Chinese literature, gender studies, performance (Slavic Languages and Cultures)
†Paul E. Vergo (Emeritus), Ph.D. University of Colorado (French)

Department Overview

The Department of Comparative Literature offers students an opportunity to develop their ability to read literary texts responsibly and critically; to study one literature in depth and another selectively; to acquire a broader sense of literary history and of literary traditions than the study of a single literature could furnish; to explore the contacts between writing and other pursuits; to acquaint themselves with some of the significant writings in the theory of literature; and to prepare themselves for methodological investigation of issues involving more than one literature.

Students must have fulfilled the UC Berkeley Entry-Level Writing Requirement before taking any course in the Department of Comparative Literature. For further information, see the College Writing Programs section of this catalog.

Program for Study Abroad. While progressing toward the undergraduate degree in comparative literature, you may have the opportunity to earn credit while studying abroad. Comparative literature majors are encouraged to participate in the Berkeley Programs for Study Abroad (EAP).

For information about these programs, contact an adviser in the Berkeley Programs for Study Abroad Office, 1600 Strawberry Hill #2302, Berkeley, CA 94720-2302, or phone (510) 642-1356. Information is also available online at www.as.berkeley.edu/bpsa.

The Major

The emphasis of the undergraduate major is on a broad understanding of literary and cultural phenomena rather than on specialized skills, although some specialized courses are among the options open to students. Recent graduates have entered graduate programs in a variety of disciplines, including medicine, law, and the social sciences. Others have gone on to jobs in a wide spectrum of careers.

The junior course (CL 100) is designed to introduce students to a variety of literary texts and critical and theoretical approaches, and to encourage them to formulate their own standards and responses. The

B prefix=language course for business majors
C prefix=language course
H prefix=honors course
R prefix=course satisfies R&c requirement
AC suffix=course satisfies American Cultures requirement

†Recipient of Distinguished Teaching Award
senior course (CL 190) is designed to help students apply the information and the principles acquired in the junior course and undertake a study project involving several literary traditions. The requirements for the A.B. with a major in Comparative Literature are listed below.

Requirements: Lower Division. There are no lower division requirements beyond the completion of the Letters and Science reading and composition requirement and of adequate work in at least one foreign language sufficient to qualify for admission to upper division literature courses in that language. Two semesters from the Comparative Literature and Composition (CL 100, 101A, and 101B, or in addition, a literature course) and two other literature courses are recommended but not required. Students who might be interested in the A.B. with honors should note the special requirements of that program (see below).

Requirements: Upper Division. A minimum of 30 approved upper division units in literature, including (1) a section of CL 100 in the junior year, a section of CL 190 in the senior year, and one Comparative Literature period course (the 151-155 series), chosen to fit the period of the student’s work in the “minor” literature (see below); (2) at least four courses in the “major” literature, totaling no fewer than 12 units, with readings in the original language and selected secondary materials from a student’s period or periods of interest (e.g., classical, medieval, early modern, modern); and (4) at least one upper division course in a classical literature, where works are read in translation or in the original from Greek, Latin, Classical Arabic, Biblical Hebrew, Sanskrit, or Classical Chinese. Note that, although only two literature courses (for example, English-French) are required for the A.B. major, prepared students who have completed at least four courses in the foreign language may find it advantageous to work in three literatures.

Requirements: Honors. Students who have attained junior standing may be admitted to the honors program if they (1) have accumulated at least an overall 3.3 grade-point average and at least a 3.55 grade-point average in the major, and at the time of graduation have accumulated at least a 3.65 grade-point average in the major and a 3.4 average in all work completed at the University; (2) have completed at least 8 upper division units in literature, including Comparative Literature 100 or the equivalent; and (3) are prepared to do upper division work in one vernacular foreign literature or one classical literature.

In addition to the requirements for the regular program outlined above, candidates for the A.B. with honors in Comparative Literature must (1) demonstrate, through either examination or coursework, a sense of the historical development of their principal literature, and (2) earn a grade of B or higher for an honors thesis in Comparative Literature H195. Students interested in the honors program are urged to consult an adviser in the Department of Comparative Literature at their earliest opportunity.

Modern Greek
See 112A (Modern Greek language), 112B (Modern Greek literature). In addition, independent study topics under courses 170, 199, and 298 can be arranged with the instructor of 112A-112B to continue the study of modern Greek language and literature.

The Graduate Program
Students are admitted for postbaccalaureate work leading to the Ph.D. degree. This degree prepares students for research in ancient and modern languages and literatures and is especially designed to encourage interdisciplinary research involving the study of literary and theoretical documents in several languages. The program is designed to provide students with the maximum of flexibility compatible with a rigorous course of study. Students select comprehensive historical coverage of one literature, with students designing an individual program of study that involves two additional literatures. Further information concerning the program should be sought from the office of graduate studies in the Department of Comparative Literature.

Undergraduate Preparation. Students interested in the graduate program in comparative literature at Berkeley are advised that strong undergraduate preparation and considerable reading will speed up their work at the graduate level.

Requirements for the Ph.D. Degree. A minimum of 10 graduate courses is required for the Ph.D. degree, counted cumulatively from the beginning of graduate study at Berkeley. (Students entering with M.A.’s from other institutions will be able to count Prerequisites: (a) UC Analytical Writing Placement Exam, (a) a 3.5 grade point average in high school English, (b) a reading knowledge of an ancient or modern foreign language, and (c) permission of the instructor.

Courses include: Approaches to Comparative Literature, as well as advanced upper-division courses in the major and each of two minor literatures. These are intended to help prepare students for the Ph.D. written and oral qualifying examinations, which examine the candidate’s historical knowledge of the context and are based on reading lists and a statement of interests drawn up by the student in consultation with an adviser. Students are expected to complete these examinations by the fourth year of study and to devote the following three years to the development of a prospectus and the completion of a doctoral dissertation. Dissertation committees are generally composed of members of the Department of Comparative Literature and other related departments. A final examination on the dissertation and its immediate area may be required.

Lower Division Courses
H1A-H1B. English Composition in Connection with the Reading of World Literature. (4:4) Three hours of lecture per week, and individual conferences. Three hours of lecture per week plus individual conferences. Prerequisites: UC Analytical Writing Placement Exam, (a) a 3.5 grade point average in high school English, (b) a reading knowledge of an ancient or modern foreign language, and (c) permission of the instructor.

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Lower Division Courses
H1A-H1B. English Composition in Connection with the Reading of World Literature. (4:4) Three hours of lecture per week, and individual conferences. Three hours of lecture per week plus individual conferences. Prerequisites: UC Analytical Writing Placement Exam, (a) a 3.5 grade point average in high school English, (b) a reading knowledge of an ancient or modern foreign language, and (c) permission of the instructor.

Courses include: Approaches to Comparative Literature, as well as advanced upper-division courses in the major and each of two minor literatures. These are intended to help prepare students for the Ph.D. written and oral qualifying examinations, which examine the candidate’s historical knowledge of the context and are based on reading lists and a statement of interests drawn up by the student in consultation with an adviser. Students are expected to complete these examinations by the fourth year of study and to devote the following three years to the development of a prospectus and the completion of a doctoral dissertation. Dissertation committees are generally composed of members of the Department of Comparative Literature and other related departments. A final examination on the dissertation and its immediate area may be required.
To provide a coherent text, I'll start by listing the course descriptions and requirements, and then proceed to summarize the key points. This will help in understanding the context and structure of the courses listed.

### Course Descriptions

#### 100. Introduction to Comparative Literature
- **Course Type:** Lecture
- **Credits:** 4
- **Description:** This course is designed to give all new graduate students an overview of the field of comparative literature. It aims to introduce students to the comparative study of literature and culture, emphasizing on principles of comparative methods and analysis with a focus on selected literary, critical, and theoretical texts from antiquity to the present. Readings in English and at least one foreign language.
- **Prerequisites:** Upper division standing or consent of instructor.
- **Notes:** (F,S,P) Staff

#### 112A-112B. Modern Greek Language and Modern Greek Literature
- **Course Type:** Lecture
- **Credits:** 4
- **Description:** This course focuses on the modern Greek language and literature from the 18th to the present, including the Byzantine period and the post-Byzantine period.
- **Prerequisites:** Upper division standing in a foreign language.
- **Notes:** C prefix=cross-listed course, H prefix=honors course

#### 151. The Ancient Mediterranean World
- **Course Type:** Lecture
- **Credits:** 3
- **Description:** This course covers the ancient Mediterranean world from prehistoric times to the fall of the Roman Empire. It includes a study of the major civilizations of the Mediterranean and their cultural, political, and economic systems.
- **Prerequisites:** Upper division standing.

#### 152. The Middle Ages
- **Course Type:** Lecture
- **Credits:** 3
- **Description:** This course explores the literature of the Middle Ages, from the fall of the Roman Empire to the rise of the Renaissance.
- **Prerequisites:** Upper division standing.

#### 153. The Renaissance
- **Course Type:** Lecture
- **Credits:** 3
- **Description:** This course examines the literature and culture of the Renaissance period, from the 14th to the 17th centuries.
- **Prerequisites:** Upper division standing.

#### 154. 18th- and 19th-Century Literature
- **Course Type:** Lecture
- **Credits:** 3
- **Description:** This course covers the literature of the 18th and 19th centuries, focusing on major writers and movements.
- **Prerequisites:** Upper division standing.

#### 155. The Modern Period
- **Course Type:** Lecture
- **Credits:** 3
- **Description:** This course explores the literature of the modern period, from the late 19th century to the present.
- **Prerequisites:** Upper division standing.

#### 156. Fiction and Culture of the Americas
- **Course Type:** Lecture
- **Credits:** 3
- **Description:** This course examines the fiction and culture of the Americas, from pre-Columbian times to the present.
- **Prerequisites:** Upper division standing.

#### 157. Approaches to Genre
- **Course Type:** Lecture
- **Credits:** 3
- **Description:** This course explores the study of literary genres, focusing on their historical, cultural, and aesthetic dimensions.
- **Prerequisites:** Upper division standing.

#### 158. Approaches to Comparative Literature
- **Course Type:** Lecture
- **Credits:** 3
- **Description:** This course provides an introduction to the field of comparative literature, focusing on methodological approaches and critical theory.
- **Prerequisites:** Upper division standing.

### Summary

The course descriptions and requirements highlight the interdisciplinary nature of comparative literature, emphasizing the study of literature in its cultural and historical contexts. Students are required to have a strong foundation in a foreign language, and many courses require knowledge of specific periods or genres. The courses range from ancient civilizations to modern times, and cover topics from ancient Greek and Roman literature to contemporary American fiction. This breadth of study is designed to provide students with a comprehensive understanding of literature across cultures and historical periods.
260. Problems in Literary Translation. (4) Three hours of lecture/discussion per week. Prerequisites: Preparation in two foreign languages or permission of the instructor. Theory and practice of translation. Students will complete a project in literary translation.

265. Gender, Sexuality, and Culture. (4) Three hours of lecture/discussion per week. Comparative investigation of a topic related to the study of gender and/or sexuality in literature and culture.

266. Nationalism, Colonialism, and Culture. (4) Three hours of lecture/discussion per week. Prerequisites: Prior completion of two foreign languages. Comparative investigation of a topic in ideology, politics, and identity and its relation to the formation of national, colonial, and/or post-colonial literatures and cultures.

270. Continuing Seminars. Two hours of discussion per week. Must be taken on a satisfactory/unsatisfactory basis. Prerequisites: Restricted to students who have completed the M.A. and are studying for their examinations for the master's degree. (F,SP)

298. Special Study. (1-4) Course may be repeated for credit. Hours to be arranged. Prerequisites: Graduate standing. Primarily for students engaged in preliminary exploration of a restricted field, involving the writing of a report. May not be substituted for available seminars. (F,SP)

299. Directed Research. (1-12) Course may be repeated for credit. Hours to be arranged. Must be taken on a satisfactory/unsatisfactory basis. Prerequisites: Satisfactory completion of the Qualifying Examination. Writing of the doctoral dissertation. (F,SP)

601. Individual Study for Master’s Students. (1-8) Course may be repeated for credit. Hours to be arranged. Must be taken on a satisfactory/unsatisfactory basis. Prerequisites: Graduate standing. Individual study for the comprehensive or language requirements in consultation with the Graduate Adviser. Units may not be used to meet either unit or residence requirements for the master's degree. (F,SP)

602. Individual Study for Doctoral Students. (1-8) Course may be repeated for credit. Hours to be arranged. Must be taken on a satisfactory/unsatisfactory basis. Prerequisites: Satisfactory completion of the Master’s examination. Individual study in consultation with the Graduate Adviser intended to provide opportunity for qualified students to prepare themselves for the various examinations required of candidates for the Ph.D. May not be used for unit or residence requirements for the doctoral degree. (F,SP)

Professional Courses

300. Supervised Teaching in Comparative Literature. (1-4) Course may be repeated for credit. Regular meetings to be arranged with supervising instructor. Prerequisites: Appointment as a graduate student instructor in the department and consent of graduate advisor. Course credit for experience gained in academic teaching through employment as a GSI. (F,SP)

360S. Methods of Teaching Literature and English Composition. (4) Three hours of lecture/discussion per week. Prerequisites: Appointment as a graduate student instructor or consent of instructor. Formerly 360A-360B. Discussion of the theory and practice of teaching composition at the college level in a department of comparative literature. (F)

Computer Science (College of Letters and Science)

Computer Science Division Office: 387 Soda Hall
www.cs.berkeley.edu

Faculty and Courses

Computer Science faculty and courses are listed under the Department of Electrical Engineering and Computer Sciences.

Choice of College

There are two ways to study computer science at Berkeley. One is to be admitted to the EECS major in the College of Engineering (COE) as a freshman. Admission to the COE, however, is extremely competitive. The other way is to enter the College of Letters and Science and, after two years and successful completion of required courses, be admitted to the L&S computer science major. This major is also extremely competitive; fewer than half of the juniors who apply are admitted, and the others must choose another major. The EECS path is appropriate for persons seeking a technical foundation of computer science education and do not want to come to Berkeley unless they are guaranteed a CS major. The L&S path is appropriate for people who are interested in a broader education in the sciences and arts, and are prepared to consider majors other than CS, and/or are not sure at the time of application that they can gain admission to EECS.

Details about the computer science and engineering program in the Department of Electrical Engineering and Computer Sciences may be found under Electrical Engineering and Computer Sciences or at www.eecs.berkeley.edu.

Computer Science Major in the College of Letters and Science

Berkeley emphasizes the science of computer science, which means much more than just computer programming. It includes the theory of computation, the design and analysis of algorithms, the architecture and logic design of computers, programming languages, compilers, operating systems, scientific computation, computer graphics, databases, artificial intelligence and natural language processing. Our goal is to prepare students both for a possible research career and for long-term technical leadership in industry. We must therefore look beyond today's technology and give students the primary ideas and the learning skills that will prepare them to teach themselves about tomorrow's technology.

Stingent admissions standards are applied because of student demand and the space currently available in the program. A faculty committee reads the applications carefully and makes a selection on the basis of academic merit. It is necessary to achieve an overall and technical grade-point average of 3.0 to be considered for admission. The technical GPA (that is, the GPA in the lower division courses required for admission to the major) is the main determinant of a student's progress. Students with a high enough overall and technical GPA (the exact cut-off depends on the demand each year) are routinely admitted. Students just below that technical GPA cutoff may be included in the total. (With approval from a faculty adviser, 8 units outside CS may be included in the total.)

Requirements for the Major

Note: Requirements for the major are under faculty review. Current information is available in the CS Advising Office, 377 Soda Hall, or at www.eecs.berkeley.edu/education/degrees.shtml.

Lower Division Requirements: The following lower division courses are required for admission to the major:

1. College-level calculus and linear algebra/differential equations (Math 1A-1B, 54);
2. Discrete Mathematics and Probability Theory (CS 70);
3. Electronics (EE 42 or 40). It is strongly recommended that EE 43, a 1-unit laboratory course, be taken concurrently with EE 42.
4. Computer science (CS 61A-61B-61C). (Note: CS 61BL fulfills the same requirement as CS 61B; the material covered is the same and only the format differs.)

All of the above courses must be graded; none may be taken passed/not passed.

Upper Division Requirements: A total of 27 units of upper division courses including:

1. Core courses (CS 150, and either CS 162 or 164, and CS 170);
2. Breadth courses from two of the following areas:
   a. Hardware (CS 152);
   b. Software (CS 162 or CS 164 i.e., a course different from that taken to satisfy the core requirement);
   c. Theory (CS 172 or CS 174);
3. An upper division mathematics or statistics course (Math 160 and Stat, 131A, 131B, or 131F are not acceptable; Engineering 118 may be used to satisfy this requirement);
4. Technical electives, subject to the approval of a faculty adviser. A list of technical electives for which approval will be routinely granted is available at the Advising Office.

Minimum Scholarship: All courses taken in satisfaction of the major requirements must be graded; none may be taken passed/not passed. A GPA of 2.0 in the upper division courses is required for graduation. The division monitors the progress of majors and expects them to maintain a 2.0 GPA from semester to semester.

Honors Program: Students enter the honors program by application. Applications are available in the CS Advising Office, 377 Soda Hall. If admitted, students must satisfy the requirements listed below. An official notation of the honors degree is made on their final Berkeley transcripts.

Before applying to the program, students must:
1. Accumulate a 3.5 GPA in all courses in the major.
2. Accumulate a 3.5 GPA overall.
3. Complete at least 60 units of coursework, including the major.
4. Complete a minimum of two upper division CS courses.

To graduate with honors, students must:
1. Complete any graded or technical upper division or graduate CS course for a total of 27 units. (With approval from a faculty adviser, 8 units outside CS may be included in the total.)
2. Complete 3-4 units of 199 work in CS/EE or another department where CS is applied. Students may also use CS H196, Undergraduate Research Opportunity Program or Undergraduate Research Apprenticeship Program (URAP) work. Students must document the completed work in an archivable project report. Students are responsible for arranging independent research with a faculty member.

Minor in Computer Science

A minor in computer science is available to all undergraduate students at Berkeley with a declared major in a computer science or engineering major. The minor in computer science provides an opportunity to take three upper division CS courses subject to availability, but with higher priority than other non-CS majors. Applications and more information on the CS minor are available at the Computer Science Advising Office, 377 Soda Hall, (510) 642-7214.

Graduate Program

Graduate degree programs are available as preparation for research and teaching (Master of Science and Doctor of Philosophy in Computer Science or Engineering) and for careers in design, development, and management (Master of Engineering and Doctor of Engineering). For details on graduate programs and procedures, see the Electrical Engineering and Computer Sciences section of this catalog.

Dance

(College of Letters and Science)

Office: Theater, Dance, and Performance Studies, (510) 642-1777
Department Office: 101 Dwinnelle Annex, (510) 642-1677

For information about dance courses and curricula, see information listed under Theater, Dance, and Performance Studies.

Demography

(College of Letters and Science)

Department Office: 2232 Piedmont Avenue, (510) 642-9800
www.demog.berkeley.edu
Chair: Kenneth W. Wachter, Ph.D.

Professors

Michel Foucault, Ph.D. Demography, methods, occupations, stratification (Sociology)
Ronald Lee, Ph.D. Economic, mathematical, and historical demography; development (Demography and Economics)
Kenneth Wachter, Ph.D. Mathematical demography, biologists, kinship, aging, censuses, simulation (Demography and Statistics)
Eugene A. Hamel, Ph.D. Historical and anthropological demography, simulation modelling (Anthropology and Demography)

Associate Professors

Jennifer Johnson-Hanks, Ph.D. Fertility, nuptiality, education, social organization, qualitative methods, Africa
John R. Wilmoth, Ph.D. Mortality and health, demographic methods, social demography (Demography)

Graduate Adviser: Ms. Johnson-Hanks.

Department Overview

The Department of Demography offers an interdisciplinary training program leading to the M.A. and Ph.D. in Demography. Demography is the systematic study of human population, a topic central to many pressing policy issues such as the economic development of Third World countries, population aging, the environment, health and mortality, family and household change, immigration, and ethnicity. Demography also has strong intellectual and institutional ties to other fields such as sociology, economics, social history, anthropology, biology, public health, and statistics. The program is one of the few in the United States granting graduate degrees in demography, rather than offering demography only as a field of specialization within some other department. This training strategy permits greater concentration and depth in demography, as well as program flexibility and breadth in related subjects. The program stresses quantitative aspects of demography and demography in the context of social science theory.

No Undergraduate Major

Although there is no undergraduate major, seniors may take graduate courses with consent of the instructor. The department offers an undergraduate minor in demography, however (see below), that is open to all interested undergraduates at Berkeley.

Graduate Programs

The master's degree is designed both as a final degree for those who wish to pursue a professional career at that level of training, and as a second degree for students earning a doctorate in demography or a related discipline. Doctoral students in demography are required to have or to take a master's degree in an allied discipline; the basic coursework for the master's program is required for the doctoral program. Students who have completed the prerequisites. Students already enrolled at a UC campus or at Stanford University are admissible to demography courses if they have completed the prerequisites. Students already enrolled in another graduate program at Berkeley who wish to earn a degree in demography may apply by executing a change or addition of major. Students not already enrolled at Berkeley who wish to enter the degree programs or pursue coursework only for professional upgrading should complete the required application and submit it to the student affairs officer in the department's main office. General deadlines for application specified by the Graduate Division apply, as do the general degree program requirements of the Academic Senate and the Graduate Division. For specific degree requirements, please ask the graduate adviser.

Graduate Program in Sociology and Demography (Ph.D. Program)

See the listing under Sociology and Demography in this catalog, or go to www.demog.berkeley.edu/gradprograms/socdemog.html.

Minor in Demography

UC students may complete one or more minor programs, normally in a field both academically and administratively distinct from their major.

Requirements: The undergraduate minor in demography provides an opportunity to combine a traditional major with departmental breadth in one of the social sciences, with specialized training in population studies. Students in the minor must complete, with a grade-point average of 2.0 (C), a total of five upper division courses. All courses applied to the minor must be taken for a letter grade. The courses are chosen as follows:

1. Three required courses: Demography 110, 126, and 175. Substitutions are not allowed.

2. One elective course from Public Health 140 or 142A; Economics 140 or 141; Sociology 105; Statistics 102, 131A, or 135. These courses are in economic, mathematical, and historical demography. Demography courses of at least 3 units may be substituted with consent of the department.

3. One elective course from Demography 140, 145, 164, 165, 189; Economics 155, 157, or 171; History 137; Sociology 111, 125. These are courses in social science dealing with environment, factors. Similar courses of at least 3 units may be substituted with consent of the department.

At least three of the five required courses must be completed at Berkeley.

For up-to-date information about course requirements, go to www.demog.berkeley.edu/undergraduate.

Lower Division Courses

24. Freshman Seminars. (1) Course may be repeated for credit as topic varies. One hour of seminar per week. Sections 1-2 to be graded on a letter-grade basis. Sections 3-4 to be graded on a passed/not passed basis. The Berkeley Seminar Program has been designed to provide new students with the opportunity to explore an intellectual topic with a faculty member in a small-seminar setting. Berkeley Seminars are offered during the campus quarters, and topics vary from department to department and semester to semester.

Staff

Upper Division Courses

110. Introduction to Population Analysis. (3) Three hours of lecture per week. Measures and methods of Demography. Life tables, fertility and nuptiality measures, age pyramids, population projection, measures of fertility control. (F) Wachter

C126. Social Consequences of Population Dynamics. (4) Three hours of lecture and one hour of discussion per week. Prerequisites: 1 or 3 or 5AC or consent of instructor. Introduction to population issues and the field of demography only as a field of specialization within some other department. (F) Wachter

145AC. The American Immigrant Experience. (4) Three hours of lecture per week, one hour of self-paced laboratory and one hour of discussion per week. The history of the United States is the history of migration. The course covers the evolution of the American population from about 20,000 BC with the growth of understanding the patterns of population growth and change during the industrial era. Topics covered include the demographic transition, resource issues, economic development, the environment, population control, family planning, birth control, family and gender, aging, intergenerational transfers, and international migration. Also listed as Sociology C126.

145AC. The American Immigrant Experience (4) Three hours of lecture per week, one hour of self-paced laboratory and one hour of discussion per week. The history of the United States is the history of migration. The course covers the evolution of the American population from about 20,000 BC with the growth of understanding the patterns of population growth and change during the industrial era. Topics covered include the demographic transition, resource issues, economic development, the environment, population control, family planning, birth control, family and gender, aging, intergenerational transfers, and international migration. Also listed as Sociology C126.

160. Special Topics in Demography. (3) Course may be repeated for credit. Three hours of lecture per week. Special topics in demography. Topics may include the demography of specific world regions, race and ethnicity, population and policy, and population and environment and similar specialized or new topics in the field of demography will be covered. (F,SP) Staff

161W. Population Policy in the World of the 21st Century. (3) Three hours of lecture per week. Prerequisites: Admission to UC Berkeley Washington Program. The course will study and discuss international demographic issues which are shaping the new century, and, in the process, to familiarize students with an important way in which academic thinking is made available to government policy makers. The core readings for this course will be taken from recent national academy reports on global population issues. Along with discussions of the sub-

B prefix=language course for business majors
C prefix=cross-listed course
H prefix=honors course
R prefix=course satisfies R&AC requirement
AC suffix=course satisfies American Cultures requirement

*Professor of the Graduate School
†Recipient of Distinguished Teaching Award
C164. Impact of Government Policies on Poor Children and Families. (4) Three hours of lecture per week. Formerly 164. Examination of the impact of policies of state intervention and public benefit programs on poor children and families. Introduction to child and family policy, and study of specific issue areas, such as income supports, housing, nutrition, healthcare, and child abuse. Also listed as Public Policy C164. (F,SP)

C165. Family and Household in Comparative Perspective. (3) Three hours of lecture per week. Prerequisites: Sociology 1, 3, 3AC or consent of instructor. How do households organize around the world? What aspects of household and family vary, and which are constant? What are the relationships between household and family on the one hand and the political, economic, or broad social patterns on the other? This course examines all of these questions, taking historical and contemporary examples from Africa, Asia, Europe, and the Americas. Also listed as Sociology C127. (F,SP)

C175. Economic Demography. (3) Three hours of lecture per week. Prerequisites: Economics 1 or 2. Formerly 175. A general introduction to economic demography, addressing the following kinds of questions: What are the economic consequences of immigration to the U.S.? Will international nations be able to afford the health and pension costs of the aging populations? How has the size of the baby boom affected its economic well being? Why has fertility been high in Third World countries? Why are marriage postponed, divorce high, fertility so low, and expected life spans from Africa, Asia, Europe, and the Americas. Also listed as Sociology C127. (F,SP)

198. Directed Group Study. (1-4) Course may be repeated for credit. One to three hours of tutorial per week. Must be taken on a pass/not pass basis. Prerequisites: 60 units; good academic standing. Undergraduate research by small groups. Enrollment is restricted by regulations governing 198 courses. (F,SP)

199. Supervised Independent Study. (1-4) Course may be repeated for credit. One to three hours of tutorial per week. Must be taken on a pass/not pass basis. Prerequisites: Consent of instructor. Supervised independent study and research. (F,SP)

Graduate Courses

C200. Population and Society. (3) Hours of seminar per week. Prerequisites: Graduate standing. This course introduces selected topics of interest in the intersection of sociology and demography. Topics covered will vary depending on the interests of instructors and students and may often be connected to recent events or new directions in research. Examples of possible topics include reproductive behaviors and technologies, inequality within or across populations, effects of globalization, social policies affecting demographic events (e.g., marriage, fertility, health, migration), cohort analysis. Also listed as Sociology C220. (F,SP)


211. Advanced Demographic Analysis. (4) Three hours of lecture per week. Prerequisites: 210, Population Studies 110, or consent of instructor. This course is designed to provide an overview of quantitative techniques commonly used in demography, sociology, economics, and other social sciences. Methods are described in both words and formulas, and students are encouraged to move freely between verbal and mathematical representations of data. Wilmoth

212. Advanced Demographic Methods. (4) Three hours of seminar per week. Prerequisites: 210. Statistical analysis of demographic data, sensitivity testing of standard methods, refinement of analytic techniques, microsimulation. (SP) Wachtler

213. Practical Computer Applications for Demographic Analysis. (2) Three hours of lecture/laboratory per week. Must be taken on a satisfactory/unsatisfactory basis. An introductory course for first year Demographic grad students. Students will receive instruction in the Demography laboratory. Covers Unix based tools for manipulating computer programs and data files, and the R, SPSS, and SAS statistical packages. The course introduces the proportional hazards model and methods of estimating it. The final project for this course is use of the 1995 Current Population Survey (fertility supplement) to compute Total Fertility Rates for the U.S. (Mason)

220. Human Fertility. (4) Three hours of lecture per week. Prerequisites: 210 or consent of instructor. Measurement of fertility by age and cause. Traditional, transition to modern fertility in Euro-American and non-European areas. Current trends and differentials by age, sex, race, occupation and marital status. Causes of mortality declines for fertility change and development. Staff

236. Aging: Economic and Demographic Aspects. (2) Three hours of lecture/discussion per week for seven and one-half weeks. Prerequisites: Advanced undergraduates may attend with consent of instructor. Population aging is a global phenomenon. Course consists of weekly seminar and future outlooks for consequences for pension systems; labor supply and retirement; health and disability; institutional and familial assistance; poverty and family status; savings, health, and bequests. Offered first half of semester. (SP) Lee

236. Aging: Economic and Demographic Aspects. (2) Two hours of lecture/discussion per week for seven and one-half weeks. Course considers demographic and economic aspects of population aging. Also listed as Economics C275B. (SP) Staff

260. Special Topics in Demography Seminar. (4) Course may be repeated for credit as topic varies. Two hours of seminar meetings/discussions, including lectures by special invited speakers, per week. Prerequisites: Consent of instructor. Introduces students to the fundamentals of population theory through the close reading of central texts from Condorcet and Malthus to Foucault. These are the thinkers whose work shaped the modern social-philosophy of human population. Throughout the course, we will focus on three analytic issues that recur in the readings in different forms: (1) methodological individualism and holism, (2) probability and the nature of rates, and (3) causation. (F,SP)

275A. Economic Demography. (3) Hours of lecture per week. Economic consequences of demographic change in developing and developed countries including capital formation, labor markets, and intergenerational transfers. Economic determinants of fertility, mortality, and migration. Also listed as Economics C275A. (F,SP) Lee

296. Advanced Research Techniques. (4) Course may be repeated for credit. Three hours of seminar per week. Prerequisites: 295 and consent of instructor.
Courses to satisfy requirements in both majors. The program in Development Studies was established under the auspices of the Institute of International Studies and is a group major in the College of Letters and Science. Students participating in a plan of study organized as an interdisciplinary group major leading to a Bachelor of Arts degree in development studies.

The Group Major

Declaring a major in development studies follows guidelines established by the College of Letters and Science. Students wishing to declare a group major in development studies (1) must have completed DS 10 and Econ 1 or 2 with grades of C or better; (2) are encouraged to have completed at least two semesters of college-level foreign language or the equivalent; and (3) must be in their final semester of undergraduate work.

Students are reminded that (1) no coursework for the major may be taken on a pass/no pass basis, and (2) no course may be used to satisfy more than one major requirement.

Minor, Development Studies does not offer a minor program. However, other minor programs taken in conjunction with Development Studies are encouraged. No more than one upper division course can be used to satisfy requirements in both a minor and a major.

Courses Outside the College of Letters and Science.

There are three ways students can fulfill the four-semester language requirement, depending on their backgrounds and abilities:

(1) Through coursework. Any combination of high school courses, college classes, summer programs, or college-level study abroad programs could satisfy the language requirement. At a minimum, students must complete the fourth semester of a language with a grade of C- or better. The first, second, or third levels of language may be taken on a Pass/No Pass basis; the fourth semester must be taken for a letter grade. Language courses need not be taken at Berkeley; courses taken at a community college or any accredited school or university are acceptable. Advanced Placement scores of 5 and higher are considered to be equivalent to four college-level semesters.

(2) With a proficiency exam. Students whose language skills are at fourth semester and beyond and who do not wish to take exams can opt to test out of this requirement. However, not all of Berkeley's language departments offer proficiency exams. See a DS adviser for further information.

(3) Being a non-native English speaker. Non-native speakers of English may use their native language to satisfy this requirement; however, documentation of fourth semester ability is still required.

Students can take a proficiency test (see above) or alternatively, provide documentation that they have been educated in their native language at least through high school, or the equivalent of high school.

Lower Division Requirements

There are five required courses and two additional courses. Honors Program. To graduate with honors from the group major in Development Studies, students must enroll in the two-semester honors seminar, DS 101 and DS 102 (spanning only), and (1) must obtain grade-point averages of 3.6 in the major and 3.5 in overall university coursework. The honors seminar is taken in addition to a student's regular coursework and is designed for fulfillment of the major and culminates in the writing of a senior thesis. The DS H195 instructor and at least one other faculty member, selected by the student in consultation with the thesis seminar instructor, read the thesis. Eligibility requirements are as follows:

The program begins with lower division courses centered around DS 10, “Introduction to Development Studies,” which provides a basic factual, theoretical and methodological grounding in development studies. There is also a language proficiency requirement which, depending on one's language skills, could require language courses.

The upper division courses include DS 100, “History of Development and Underdevelopment”, five additional courses arranged to meet disciplinary, developmental, and theoretical requirements; and two area courses. The area courses must focus on a geographic region (Latin America, South Asia, Africa, etc.) and provide a working knowledge of the cultural, historical and political economy of a region in the developing world.

Foreign Language Requirement

All DS students must be able to demonstrate proficiency in a single modern language (other than English) equivalent to four college-level semesters.

The upper division courses include DS 100, “History of Development and Underdevelopment,” five additional courses arranged to meet disciplinary, developmental, and theoretical requirements; and two area courses. The area courses must focus on a geographic region (Latin America, South Asia, Africa, etc.) and provide a working knowledge of the cultural, historical and political economy of a region in the developing world.

II. Methodology.

One course. The methodology requirement is designed to give each DS major a solid understanding of both theoretical and methodological requirements and a focus on one social science discipline (for example, economics, political science, geography) through two courses which provide critical concepts and methods for the study of development. Each DS student should choose a minimum of two development-focused courses which address a variety of historical, cultural, and political-economic concerns in the developing world and supplement the core disciplinary courses. See the IAS office for the most recent lists of Disciplinary and Development courses.

III. Area Courses.

Minimum of three courses, selected in consultation with an adviser. Students should focus on a geographic region, e.g., to gain a substantive expertise in the cultural, political, economic, and historical development of one particular part of the developing world. Students are required to take at least one course more than one discipline. Lists of approved courses can be obtained from the IAS office.

Lower Division Courses

C10. Introduction to Development. (4) Three hours of lecture and one hour of discussion per week. This course is designed as an introduction to comparative development. The course will be a general service course.
course, as well as a prerequisite for the upper division 100 series. It is assumed that students enrolled in 10 know little about life in the Third World countries and are unfamiliar with the relevant theory in political eco-

nymy of development and underdevelopment. The course will be structured around three critical concepts: land, labor, and work. Also listed as Geography C52. (F,SP)

Watts

84. Sophomore Seminar, (1.2) Course may be re-

peated for letter grade or as credit. One hour of oppor-
tunity per semester per week for 15 weeks. One and one-half

hours of seminar per semester per week for 10 weeks. Two

hours of seminar per week per unit for eight weeks.

Three hours of seminar per week per unit for five weeks.

Sections 1-2 to be graded on a passed/not passed basis. Sections 3-4 to be graded on a letter-

grade basis. Prerequisites: At discretion of instructor.

Sophomore seminaries are small interactive courses

conducted by faculty members in departments all across the campus. Sophomore seminars offer opportunity for close, regular intellectual contact between faculty

members and students in the crucial second year. The

topics vary from department to department and sem-

ester to semester. Enrollment limited to 15 sopho-

morens. (F,SP)

Upper Division Courses

C100. History of Development and Underdevel-

opment. (4) Three hours of lecture and one hour of dis-
cussion per week. Historical review of the develop-

ment of world economic systems and the impact of

these developments on less advanced countries. Course

objective is to provide a background against which to

understand and assess theoretical interpreta-
tions of underdevelopment. Also listed as Geography C112. (SP) Hart

130. Cross-Listed Topics, (1-4) Course may be re-

peated for credit. One to four hours of lecture per week.

Prerequisites: Consent of instructor. This course is

designed to accommodate cross-listed courses of-

fered through other departments, the content of which

is applicable to Development Studies majors. Content

and unit values vary from course to course. (F,SP)

150. Advanced Studies in Development Studies. (4)

Course may be repeated for credit with consent of in-

structor. Three hours of lecture and one hour of dis-
cussion per week. Advanced multidisciplinary research in
current issues and topics of development. Seminars will

focus on specific geographical areas with appro-

priate comparative material included. A major research

project is required as well as presentations. Top-

ics change each semester. (F,SP)

192. Senior Thesis, (3) Prerequisites: Upper division

standing and consent of instructor. This course is de-
signed to provide a vehicle for undergraduate students

interested in writing a major paper on a development

topic. The paper should be approximately 30 pages in

length. The student and faculty sponsor should agree

upon the topic in advance. (F,SP)

H195. Senior Honors Thesis Seminar, (2) Two hours

of seminar plus one hour of consultation per week.

Prerequisites: International and Area Studies 102 and

consent of instructor and senior standing. Honors students

are required to research and write a thesis based on the

prospectus developed in International and Area Studies

102. The thesis work is reviewed by the hon-

ors instructor and a second reader to be selected

based on the thesis topic. Weekly progress reports re-

quired. (F,SP)

197. Field Studies. (1-4) Course may be repeated

credit. Individual meetings. Must be taken on a passed/not passed basis. Prerequisites: Upper division

standing and consent of instructor. Supervised expe-

rience relevant to specific aspects of Development Studies

in off-campus organizations. Regular individ-

ual meetings with faculty sponsor and written reports

required. (F,SP)

198. Directed Group Study, (1-4) Course may be re-

peated for credit. Directed group meetings to be arranged

Must be taken on a passed/not passed basis. Prere-

quisites: Upper division standing and consent of in-

structor. Directed group study (upper division). (F,SP)

199. Supervised Independent Study and Research for

Undergraduates. (1-4) Course may be repeated for

credit. Individual meetings. Must be taken on a passed/not passed basis. Prerequisites: Written pro-

posal must be approved by a faculty advisor. Enroll-

ment is restricted by regulations of the College. (F,SP)

Dutch Studies

(College of Letters and Science)

Group Major Office: S311 Dwinelle Hall, (510) 642-7445
german.berkeley.edu/dutch/index.html

Professors

Jan de Vries, Ph.D. (History)
Thomas F. Shannon, Ph.D. (German)
Johan P. Snapper, Ph.D. (German, Queen Beatrix
Professor)
J. Frits Staal, Ph.D. (South and Southeast Asian Studies)
(Emunius)

Associate Professors

Elisabeth Hong, Ph.D. (History of Art)
Sylvia C. Tiong, Ph.D. (South and Southeast Asian Studies)

Lecturer

Inez Hollander, Ph.D. University of Nijmegen, Netherlands

Peter Paul Rubens Professors

Hugo Baetens Beardsmore, Ph.D. (Brussels, 1988)
Herman Brel, Ph.D. (Ghent, 2000)
Els de Bens, Ph.D. (Leuven, 1994)
Clem-Louis Neufeld, Ph.D. (Antwerp, 1995)
Herman Parest, Ph.D. (Antwerp, 1995)
Walter Prever, Ph.D. (Ghent, 1993)
Eugene Roosens, Ph.D. (Leuven, 1990)
Hilde Symoens-de Ritter, Ph.D. (Ghent, 1998)
Carlos Tindemans, Ph.D. (Antwerp, 1985)
Katrine van der Stighelen, Ph.D. (Leuven, 2002)
Herman van der Wee, Ph.D. (Leuven, 2004)
Adriaan E. Verhulst, Ph.D. (Ghent, 1989)
Roland Willemsjes, Ph.D. (Brussels, 1984)

Adviser: Inez Hollander, Ph.D.

Group Major in Dutch Studies

The group major in Dutch studies is designed to pre-

sent a balanced curriculum of the language, lit-

erature, history, and culture of The Netherlands and

Flanders. (Emunius) The program is best special-

ized (in dealing with two countries) and broad (in its

diverse-minded approach to the subject), it is recom-

mended that the student also prepare a strong re-

lated discipline. The group major in Dutch studies

may constitute the focal point to a larger area of interest. Suggested related fields of con-

centration are comparative literature, German, his-

tory, history of art, linguistics, and South and

Southeast Asian studies (e.g., Indonesian).

See Department of German for a list of courses.

The Major

Lower Division. Dutch 1 and 2 or equivalent.

Upper Division. The student is expected to com-

plete a minimum of 30 upper division units, but no

more than 36 from those courses listed below. Of

these the following are required:

Language courses: Dutch 107, 110, and 125 (lat-

ter may be repeated once for credit).

Literature courses: 6 units in either the Dutch 140

or 160 series (which may be repeated as topics

change) or Dutch 180.

Culture courses: Dutch 170, Dutch 177, or one his-
tory of art course (166, 172, 173).

Senior Thesis: Dutch 190.

Additional courses to be selected from the follow-

ing list to complete the major (see Department of

German for complete description of these courses): Dutch

140, 160 series, 165; Afrikaans 150; History

163, 170; Comparative Literature 170; Music 129.

Majors in Dutch studies who are enrolled in Dutch

160 series courses are expected to read the liter-

ature in the original language.

Honors Program. Students accepted in the hon-

ors program will enroll in Dutch H151 (1-4 units) for a

total of 4 units and will be expected to write a se-

nior thesis (Dutch 190) with distinction.

For additional information, consult the adviser

for the group major in Dutch studies, 5329 Dwinelle

Hall.

The Minor

Required courses: Five upper division courses: (1)

Dutch 110, 125 (may be repeated for credit), 170;

(2) two additional upper division courses from the fol-
lowing: environmental issues, extinct pattern

James Bishop, Sc.D. Massachusetts Institute of Technology.

Ocean carbon cycle dynamics, ocean biogeochemical

cycles, ocean instrumentation

George H. Brimhall Jr., Ph.D. University of California,

Berkeley. Mineral resources, geochemistry of sur-

corial ore formation, field geography and digital matching

technology

Jan G. E. Carmichael (Emunius), Ph.D. Imperial College

of Science and Technology, University of London. Ignite-

ous and experimental petrology

Kurt M. Cuffey, Ph.D. University of Washington. Glaciol-

ogy, geomorphology, paleoclimatology, earth system

science

Inkie de Patie, Ph.D. Leiden University (Netherlands).

Planetary astronomy: infrared imaging (speckle, AO) and

spectroscopy of solar system bodies, radio observations

(mm wavelengths, centimeter-meters wavelengths) of

planets, satellites, comets. Atmospheres, magnetospheres, and

hydrospheres

Donald J. DePaolo, Ph.D. California Institute of Technology.

Isotope geochemistry

William E. Dieich, Ph.D. University of Washington. Hillslope

and fluvial geomorphology

Inez Y. Fung, Sc.D. Massachusetts Institute of Technology.

Geophysical fluid dynamics, numerical modeling, biogeochemical cycles, remote sensing of earth systems, atmos-

tphere-ocean interactions, atmosphere-biosphere interac-

tions

Harold C. Helgeson, Ph.D. Harvard University. Theoretical

groundwater geochemistry, thermodynamics

B. Lynn Ingram, Ph.D. Stanford University. Paleoclimate

reconstruction; paleoceanography; marine, estuarine, and

sealevel change; geochemistry; geoarcheology

Raymond Jeanloz, Ph.D. California Institute of Technology.

Ultra-high-pressure/mineral physics

James W. Kirchner, Ph.D. University of California, Berkeley.

Environmental geochemistry, watershed hydrology, geomorphology, evolutionary ecology

Michael Manga, Ph.D. Harvard University. Geodynamics,

volcanology, hydrology

James W. Rector III, Ph.D. Stanford University. Applied

groundwater geochemistry

Mark A. Richards, Ph.D. California Institute of Technology.

Geodynamics, gravity field and figure of the Earth, mantle

convection, crustal deformation, numerical modeling

Barbara A. Romanowicz, Doctorat de Paris. Seismology,

dee-earth structure, earthquakes

Ch-yuen Wang, Ph.D. Harvard University. Tectonophysics,

geochemistry, rock deformation

Hans-Rudolf Wenk, Ph.D. University of Zurich.

Geophysics, structural geology

Mark S. T. Bukowinski (Emeritus), Ph.D. University of California

at Los Angeles. Physics of planetary interiors

Garnes M. Curtis (Emeritus), Ph.D. University of California

Berkeley
Atmospheric Science

Atmospheric Science Adviser: Inez Y. Fung, Ph.D.

This course of study is a new undergraduate program (www.atmos.berkeley.edu). Exploring the fundamental natural processes controlling atmospheric composition, circulation dynamics, and climate, and understanding how these processes have changed in the past and may change in the future, are among the greatest intellectual and technological challenges of our time. Topics covered will include the physics of climate variability and climate change, changes in stratospheric ozone, coupling of atmospheric chemistry and climate, changes in the oxidation capacity of the troposphere, smog, and the impacts of atmosphere-biosphere exchange on atmospheric composition.

Lower Division: Math 1A-1B-53-54, Physics 7A-7B-7C, Chem 1A, EPS 50

Upper Division: EPS 102, 104 or 121, 130, 150 plus 11 additional upper division units (see department or go to eps.berkeley.edu for a list of electives)

Marine Science

Marine Science Adviser: Lynn Ingram, Ph.D.

This course of study is a new undergraduate program. The ocean plays a central role in physical, biological, chemical, and geological processes on earth. The field of marine science thus requires an understanding of the interactions between the biosphere, hydrosphere, lithosphere, and atmosphere. Some examples of the current research directions of societal concern in the marine sciences include: the role of the ocean in climate change; the ocean’s role in climate phenomena such as El Niño and La Niña, and their effect on modern marine ecosystems; the history of El Niño and other climatic/oceanographic events recorded in marine sediments and corals; coastal pollution and its affect of coastal marine ecosystems; coastal erosion (natural and human-caused).

Lower Division: Math 1A-1B (or 16A-16B), Physics 7A-7B (or 8A-8B), Chem 1A (or 3A), Biology 1B, EPS 50, C52

Upper Division: EPS 102, 104 and four courses from the following: EPS 100A, 100B, 103/203, 115, 116, 116A, 116B plus 8 additional upper division units (see department or go to eps.berkeley.edu for a list of electives)

Planetary Science (Pending)

Planetary Science Track Adviser: Douglas Dreger, Ph.D.

Planetary science encompasses the study of the physical and chemical nature of planetary bodies, both in the Solar System and in extrasolar systems. The formation of planets, the forces that sculpted their orbits, the processes that shaped their interiors, surfaces, and atmospheres and the development of life all fall within its rubric. Understanding these complex phenomena requires knowledge of astronomy and astrophysics, earth science, meteorology, atmospheric science, space science, plasma physics, chemistry, and biology. The Planetary Science track has been developed to study the remarkable interface among these disciplines.

Lower Division: Math 1A-1B-53-54, Physics 7A-7B-7C, Chem 1A, EPS 50

Upper Division: EPS 102, 150, C162 plus 14 additional upper division units (see department or go to eps.berkeley.edu for a list of electives)

Honor Arcs Program

Students in the honors program must fulfill the following additional requirements: 1) maintain a grade-point average of at least 3.3 in all courses in the major, and an overall grade-point average of at least 3.3 in the University; 2) carry out an individual research or senior project, involving at least three units of H195. The project is chosen in consultation with a departmental adviser, and written report is judged by the student’s research supervisor and a departmental adviser. Application for the Honors Program should be made through the student’s adviser no later than the end of the student’s junior year.
Center for Computational Seismology. Within the Earth Sciences Division at the Lawrence Berkeley National Laboratory is a facility for modern seismological research which relies heavily upon intensive parallel computational techniques (e.g., tomographic imaging, 3D wave propagation, high resolution inverse earthquake analyses) or large database manipulations. The center is used in a number of Ph.D. and postdoctoral research studies.

The Engineering Geoscience Group (bozo-1-bk) teaches and researches Applied Geophysics. It is an integral part of the Geological Engineering Group within the Department of Civil and Environmental Engineering at the University of California, Berkeley. The group was founded in 1962, to study and encourage the use of geo-physical methods in mineral and petroleum exploration programs. Recently, attention has shifted to include the general topic of subsurface mapping and imaging. While research in resource exploration topics is still actively pursued, the group’s activities now include work on methodology and instrument development for a variety of near surface applications related to the resolution of geotechnical and environmental problems. In this area, the group works jointly with the Department of Civil and Environmental Engineering on site remediation, near surface hydrology and soil stability projects. Incidentally, geophysical technology developed for use in shallow subsurface regions can also be used as an aid to archeological searches. The technology is also expected to be useful in solving contemporary problems associated with the detection and removal of buried explosive ordinance.

Center for Integrative Planetary Science (CIPS) is a new organized research unit at the University of California, Berkeley. Our task is to unite scientists and students from many disciplines on a rapidly emerging scientific landscape demanded by striking developments. These discoveries, and others during the past decade, have revealed a remarkable set of connections among many separate traditional sciences: geology, astrophysics, meteorology, oceanography, organic chemistry, biology, and planetary science. These disciplines are well represented at Berkeley, where strong research programs with long records of accomplishment have existed for some time in diverse campus departments, the Space Science Laboratory, and the Lawrence Livermore National Laboratory. CIPS takes advantage of these strengths with an integrated study of the physical origin and geochemical evolution of planets and planetary systems. Much of the compelling research about our solar system and other planetary systems will take place in the context of planetary boundaries. From the condensation of planets within protoplanetary discs to the geochemical history of planets and moons, future researchers will require frontier knowledge of all related disciplines.

Lower Division Courses

2. Gems and Gem Materials. (1-3) One to three hours of lecture per week. The primary goal of the course is to present some introductory earth science and to provide students with a solid understanding of gemology. The course covers (1) processes leading to the formation of gems in the Earth; (2) how gems are identified; (3) factors that affect the appearance and value of gems; (4) processes used to enhance the appearance of gems; (5) gemstones used to simulate common gemstones; and (6) issues associated with the synthesis of gems. Information about each of the main topics is provided in class and is supplemented by a term paper and practical (laboratory) work. (F,SP) Banfield

3. The Water Planet. (2) Two hours of lecture per week. Formerly Geology 3. An overview of the processes that control water supply to natural ecosystems and the atmosphere. The course emphasizes the hydrologic cycle, water resources, and groundwater. Patterns of water use, threats to water quality, effects of global climate change on future water supplies. Water issues facing California. (F,SP)
8. Geologic Record of Climate Change. (3) Three hours of lecture per week. Formerly Geology 8. This course will review the geologic record of climate change, and discuss how their knowledge is relevant to the present day. We will study the entire spectrum of climate variations, from the formation of the earth's early atmosphere to 4.6 billion years ago to the ice ages to the development of instrumental records.

C12. The Planets. (3) Three hours of lecture per week. A tour of the mysteries and inner workings of our solar system. What are planets made of? Why do they orbit the way they do? How do planets form, and what are they made of? Why do some bizarre moons have oceans, volcanoes, and ice floes? What makes the Earth hospitable for life? Is the Earth a unique planet or one of a cosmic quiet or some cosmic quirk? This course will introduce basic physics, chemistry, and math to understand planets, moons, rings, comets, asteroids, atmospheres, and oceans. Understanding these worlds will help us save our own planet and help us understand our place in the universe. Also listed as Letters and Science C70T and Astronomy C12.

20. Earthquakes in Your Backyard. (3) Two hours of lecture per week and one or more field trips. Formerly Geology 24. An introduction to earthquakes and their causes and effects. General discussion of basic principles and methods of seismology and geological tectonics, distribution of earthquakes in space and time, effects of earthquakes, and earthquake hazard and risk, with particular emphasis on the situation in California.

24. Freshman Seminar in Earth and Planetary Sciences. (1) Course may be repeated for credit as topic varies. One hour of seminar per week. Sections 1-4 to be graded on a satisfactory/unsatisfactory basis. Sections 5-8 to be graded on a passed/not passed basis. Formerly Geology 24. The freshman seminar in earth and planetary science is designed to provide new students with an opportunity to work in geology under the direction of a faculty member in a small seminar setting. Topics will vary from semester to semester but will include such possible topics as great voyages of geological discovery; the role of atmospheric sciences in geology, and the historical disciplines, helping them cross the barriers between fields of historical study. (SP) Alvarez

C30. The Ocean World. (4) Three hours of lecture and one hour of mandatory discussion per week. The ocean covers 71 percent of the earth's surface, yet the ocean floor is less studied than the moon. This almost unexplored landscape is made up of flat plains, deep trenches, volcanic mountains, and huge ridges. In this dark abyss, life is supported by a rain of nutrients from pelagic photosynthesis, and by chemosynthetic bacteria near hot vents. The Ocean World class will cover ocean environments, scientific exploration, and marine ecosystems. The course will cover ocean currents, waves, marine habitats, coral reefs, hurricanes, tsunamis, El Niños, volcanic islands, coasts, and beaches, new frontiers in ocean sciences, including the technologies used to monitor and probe the ocean depths: including scuba, submarines, and satellites. Also listed as Geography C30. Ingram

39. Freshman/Sophomore Seminar. Course may be repeated for credit. Sections 1-2 to be graded on a letter-grade basis. Sections 3-5 to be graded on a passed/not passed basis. Prerequisites: Priority given to freshmen and sophomores. Formerly Geology 39. Freshman/Sophomore Seminars offer more opportunities for undergraduate students to practice communicating scientific knowledge by teaching ocean science in the Berkeley hills and environs, and to learn about the global and regional processes that have shaped the earth through time, with emphasis on the theory of plate tectonics. Laboratory work will involve the practical study of minerals, rocks, and geological maps and exercises on geological processes.

50. Geology of National Parks. (1) Two days of field trip per week. This course is the field component of 49A. Enrollment is limited to 30 students. (F,SP) Wang

49B. Geology of National Parks. (1) One-day field trip per week. The course is the field component of 49B. (F,SP) Wang

50. The Planet Earth. (4) Three hours of lecture and three hours of laboratory per week. Formerly Geology 50. An introduction to the earth's processes that have shaped the earth through time, with emphasis on the theory of plate tectonics. Laboratory work will involve the practical study of minerals, rocks, and geological maps and exercises on geological processes.

51. Big History—Cosmos, Earth, Life, and Humanity. (4) Three hours of lecture and one hour of discussion per week. This course explores the four major regimes of history—cosmic history, earth history, life history, and human history. By bringing together these normally unrelated topics, it seeks to understand the character of history by examining longterm trends and critical chance events, by looking for common causes underlying historical change in all four regimes, and by identifying the novelties that have made each regime unique. It offers a broad perspective for students interested in any one of the historical disciplines, helping them cross the barriers between fields of historical study. (SP) Alvarez

C51. Big History—Cosmos, Earth, Life, and Humanity. (4) Three hours of lecture and one hour per week. Must be taken on a passed/not passed basis. Prerequisites: Sophomore standing, except for freshmen who have previously taken 50. This course explores the four major regimes of history—cosmic history, earth history, life history, and human history. By bringing together these normally unrelated topics, it seeks to understand the character of history by examining longterm trends and critical chance events, by looking for common causes underlying historical change in all four regimes, and by identifying the novelties that have made each regime unique. It offers a broad perspective for students interested in any one of the historical disciplines, helping them cross the barriers between fields of historical study. Also listed as Letters and Science C70X. (SP) Alvarez

60. Quantitative Analysis of Earth Sciences. (4) Three hours of lecture and one hour of discussion per week. Prerequisites: Math 1A-1B or equivalent. Formerly Geology 60. Formerly Geology 60. This course introduces students to the quantitative description of geological processes. Topics include rate processes, description of three dimensional geological fields like gravity, temperature, velocity, conservation equations; radioactive dating; biological times; geological time series; multiphase chemical equilibrium.

80. Environmental Earth Sciences. (2) Students will receive credit for 80 after taking Integrative Biology 80 or Paleontology 15. Two hours of lecture per week. Formerly Geology 80. The course describes geological processes active on and in the earth and man’s interactions with them. Geologic aspects of use of the land and oceans based on understanding of an earth’s environmental processes. (F,SP)

C82. Introduction to Oceans. (2) Two hours of lecture per week for students who have successfully completed the following courses at high-school level: physics, chemistry, or biology is recommended. The geology, physics, chemistry, and biology of the world oceans. The application of oceanographic instruments will be explored through special topics such as energy from the sea, marine pollution, food from the sea, and climate change. Also listed as Integrative Biology C82. (F) Staff

84. Sophomore Seminar. (1,2) Course may be repeated for credit. This seminar will meet one or two hours per week per unit for 15 units. One and one-half hours of seminar per week per unit for 10 weeks. Two hours of seminar per week per unit for eight weeks. Three hours of seminar per week per unit for five weeks. Sections 1-2 to be graded on a passed/not passed basis. Sections 3-4 to be graded on a letter-grade basis. Prerequisites: At discretion of instructor.

Sophomore seminars are small interactive courses offered by faculty members in departments all across the campus. Sophomore seminars offer opportunity for undergraduate students to explore various topics which vary from semester to semester. Enrollment limited to 15 sophomores. (F,SP)

98. Directed Group Study. (1-6) Course may be repeated for credit. Group study enrollments. Must be taken on a passed/not passed basis. Formerly Geology and Geophysics 98. Group study of selected topics which vary from semester to semester. (F,SP)

C110. Communicating Ocean Earth Science. (3) Two and one-half hours of lecture and one hour of fieldwork per week. Prerequisites: One course in introductory biology, geology, chemistry, physics, or marine science recommended. Formerly Geophysics 59A. Communicating ocean earth science. (F,SP)

C100A. Mineralogy. (3) Three hours of lecture and six hours of laboratory per week. Prerequisites: Some background in chemistry and physics. Formerly Geology 100A. Introduction to structural, compositional, and physical properties of minerals, the crystal systems and the elements which make up the mineral world. Formerly Geology 100B. Introduction to the principal geologic environments where rocks are formed and classified. Igneous, sedimentary, and metamorphic rocks. (F,SP)

C100B. Genesis and Interpretation of Rocks. (4) Two hours of lecture and four hours of laboratory per week, plus one weekend field trip. Prerequisites: Geology 100A. Formerly Geology 100B. Introduction to the principal geologic environments where rocks are formed and classified. Igneous, sedimentary, and metamorphic processes discussed in the context of global tectonics.

105B. Field Geology and Digital Mapping. (4) Seven hours of field work and two hours of lecture per week, and additional field trips. Prerequisites: 50 or equivalent introductory course in Earth and Planetary Science. Formerly Geology 105. Field Geology and Digital Mapping, field techniques for examining the Berkeley hills and environs leading to original interpretation of geological processes and history from stratigraphic, structural, and lithological investigations. Integration of the Berkeley hills geology into the Coast Ranges and California as a whole through field trips to key localities. Training in digital field mapping, global positioning systems, and laser surveying. Interdisciplinary focus encourages participation by majors.

102. History and Evolution of Planet Earth. (4) Three hours of lecture per week. Prerequisites: 50. Formerly Geology 102. Formerly Geology 102B. Formerly Geology 102C. Formerly Geology 7A. Introduction to marine geochemistry; the global water cycle; major processes governing the distribution of chemical species within the hydrogenosphere; mass balance, fluxes, and reaction involving the environment from global to submicron scales; relationships to physical, biological, and geological processes; geochemical tracers and tools.

*Professor of the Graduate School
†Recipient of Distinguished Teaching Award
104. Mathematical Methods in Geophysics. (4) Three hours of lecture and one hour of computer laboratory per week. Prerequisites: Mathematics 53-54. Formerly Geophysics 104. A study of linear systems. Linear inverse problems, least squares; generalized inverse, resolution; Fourier series, integral transforms; time series analysis, spherical harmonics; partial differential equations and solutions of a complex variable; probability and significance tests, maximum likelihood methods. Intended for students in geophysics and other physical sciences.

105. Hydrogeology. (3) Three hours of lecture per week. Prerequisites: Math 1A-1B, Physics 7A. Chemistry 1A-1B; 60 or Math 53 is recommended. Formerly Geology 105. Formerly Geophysics 121. Elements of fluid flow in the earth's crust, interaction of geological processes and fluid flow, transport of energy and solutes, migration of hydrocarbons and contaminants, and wastewater remediation.

108. Geodynamics. (4) Three hours of lecture and one hour of discussion per week. Prerequisites: 60, Physics 7A, or Mathematics 53, 54. Formerly Geophysics 108. Basic principles in studying the physical properties of earth materials and the dynamic processes of the earth. Examples are drawn from tectonics, mechanics of earthquakes, etc., to augment course material.

115. Stratigraphy and Earth History. (4) Three hours of lecture, one five-day field trip and two one-day field trips. Prerequisites: 50, 100A-100B, or consent of instructor. Formerly Geology 115. Formerly Geophysics 116. Introduction to classification and geometry of geologic structures; their origins and genetic relation to stress fields and their use as kinematic indicators; case histories of selected regions to elucidate tectonic evolution of mountain systems in different plate tectonic settings. Laboratory exercises will focus on analysis of hand specimens and structural relations portrayed on geologic maps. Several trips to observe geologic structures in the field to supplement laboratory exercises.

116. Structural Geology and Tectonics. (3) Two hours of lecture, two hours of laboratory, several one- to two-day field trips. Prerequisites: 100A-100B or consent of instructor. Formerly Geology 116. Formerly Geophysics 116. An overview of the use of natural isotopic variations to study earth, planetary, and environmental topics. Topics include geochronology, cosmochemical studies of surficial processes, radiogenic dating, water isotopes in the water cycle, and radiogenic and stable isotopes of study of planetary evolution, mantle dynamics, volcanoes, groundwater, and geothermal systems. The course introduces students to the methods of using isotopes and isotopic systems and models to understand Earth's interior. The course is designed to give students an overview of the principles of using isotopes and isotopic systems and models to understand Earth's interior. The course is designed to give students an overview of the principles of using isotopes and isotopic systems and models to understand Earth's interior.

117. Geomorphology. (4) Three hours of lecture and three hours of laboratory per week, plus weekend field trips. Prerequisites: 50, 100A-100B, 101, or consent of instructor. Formerly Geology 117. Quantitative examination of landforms, running water, weathering, mechanics of soil erosion by water and wind, mass wasting, glacial and periglacial processes and hillslope evolution.

118. Advanced Field Course. (3) Three hours of lecture and two hours of discussion per week, plus two-day field trip. Prerequisites: 50, 100A-100B, 101, or consent of instructor; 119 is strongly recommended. Formerly Geology 118. Advanced geological mapping, intensive field observation, and problem solving in the field areas selected by instructors. Includes preparation of final report on field area.

119. Geologic Field Studies. (2) Course may be repeated for credit. Prerequisites: 101 and consent of instructor. Formerly Geology 119. Two to four weekend field trips to localities of geological interest.

120. Analysis of Environmental Data. (4) Three hours of lecture and three hours of laboratory per week. Prerequisites: One year of calculus or consent of instructor. Formerly Geology 120. Fundamentals of exploratory data analysis and hypothesis testing for environmental scientists, with emphasis on characterizing and evaluating uncertainty. Introduction to selected topics in environmental analysis, such as including error propagation, design of experiments, and Monte Carlo methods. Microcomputer laboratories, using real environmental data, explore concepts and techniques presented in lecture. Also listed as Energy and Resources Group C130. (F) Kirchner

121. Seismology. (4) Three hours of lecture and three hours of laboratory per week. Prerequisites: Physics 7A-7B and Mathematics 53, 54. Formerly Geophysics 121. Elastodynamics; elastic waves; inverse problems for the velocity distribution; refraction and reflection methods of seismic exploration. Theory of the seismograph; interpretation of seismograms; causes, mechanisms, and effects of earthquakes; earthquake hazard and risk.

122. Physics of the Earth and Planetary Interiors. (3) Three hours of lecture per week. Prerequisites: Physics 105. Formerly Geophysics 122. Gravity field, density distribution, and internal structure of the Earth and planets. Constitutive relations, temperature distribution, and energetics of the Earth's interior. The geomagnetic field, paleomagnetism, the geodynamo, and concepts in geophysical fluid dynamics.

124. Isotopic Geochemistry. (3) Three hours of lecture and one hour of discussion per week. Prerequisites: Chemistry 1A-1B, Mathematics 1A-1B. An overview of the basic principles and methods of using natural isotopic variations to understand Earth, planetary, and environmental processes. Topics include geochronology, cosmochemical studies of surficial processes, radiogenic dating, water isotopes in the water cycle, and radiogenic and stable isotopes of study of planetary evolution, mantle dynamics, volcanoes, groundwater, and geothermal systems. The course introduces students to the methods of using isotopes and isotopic systems and models to understand Earth's interior. The course is designed to give students an overview of the principles of using isotopes and isotopic systems and models to understand Earth's interior. The course is designed to give students an overview of the principles of using isotopes and isotopic systems and models to understand Earth's interior. The course is designed to give students an overview of the principles of using isotopes and isotopic systems and models to understand Earth's interior. The course is designed to give students an overview of the principles of using isotopes and isotopic systems and models to understand Earth's interior.

125. Geologic Oceanography. (4) Three hours of lecture per week. Prerequisites: Mathematics 53, 54, Physics 7A-7B-7C. Physics of planetary systems, both solar and extra-solar. Star and planet formation, radiative transfer, small-body dynamics, impact processes, including collisions of radiation with matter, tides, planetary interiors, atmospheres, and magnetospheres. High-quality oral presentations will be required in addition to problem sets. Also listed as Astronomy C162. Chiang, de Pater, Spinrad

170A. Geocrossroads of Earth Resources and Society. (4) Three hours of lecture and one hour of discussion per week, plus two-day field trip. Formerly 106AC. Intersection of geological processes with American Cultures in the past, present, and future. Geology as an ethnographic tool. The distribution of energy fuels, metals, and industrial minerals. Evolution and diversity of opinion in attitudes about resource development, environmental management, and conservation on public, private, and tribal lands. Impacts of renewable energy and the imperative of resource literacy. Also listed as Letters and Science 170AC. This course satisfies the American Cultures requirement. Brimhall

C171. Geoaerological Science. (4) Three hours of lecture and three hours of laboratory per week. This course provides a laboratory course experience for undergraduate students. It will cover a broad range of current scientific techniques used in the field and in the analysis of geoarchaeological materials. The course includes field and laboratory studies in analytical chemistry, geology, petrology/petrography and a survey of dating materials in archaeology, the historical development of geoarchaeological science and other aspects of archaeological science applied to geoarchaeological materials. Also listed as Anthropology C131. (SP) Shackley

C178. Applied Geophysics. (3) Two hours of lecture and three hours of laboratory/field exercise per week. Prerequisites: Mathematics 53, 54, Physics 7A, 7B and an introductory course in geology. Formerly Engin 145. Material Science C145, 145L. Earth and planetary materials C145, 145L. The theory and practice of geophysical methods for determining the subsurface distribution of physical rock and soil properties. Measurements of gravity and magnetic fields, electrical and electromagnetic fields, and seismic velocity are interpreted to map the subsurface distribution of density, magnetic susceptibility, electrical conductivity, and mechanical properties of rocks and soils. Also listed as Civil and Environmental Engineering C178. (F) Rector

C180. Air Pollution. (3) Three hours of lecture and one hour of discussion per week. Prerequisites: Chemistry 1A-1B and Physics 8A or consent of instructor. An introduction to air pollution and the chemistry of earth's atmosphere.
atmosphere. The fundamental natural processes controlling trace gas concentrations in the atmosphere, and how anthropogenic activity has affected those processes at the local, regional, and global scales. Specific topics include stratospheric ozone depletion, increasing concentrations of greenhouse gases, smog, and changes in the oxidation capacity of the troposphere. This course will be listed as Environ Sci, Policy, and Management C180. (F) Goldstein

181. Atmospheric Physics and Dynamics. (3) Three hours of lecture/discussion per week. Prerequisites: Mathematics 53, 54; Physics 7A-7B-7C. Formerly 144. This course examines the processes that determine the Earth’s climate and the geophysical aspects of the atmosphere. The approach is deductive rather than descriptive: to figure out the properties and behavior of the Earth’s atmosphere based on the laws of physics and fluid dynamics. Topics will include interaction between radiation and atmospheric composition; the role of water in the energy and radiation balance; governing equations for atmospheric motion, mass conservation, and thermodynamic energy balance; geostrophic flow, quasigeostrophic motion, baroclinic instability and dynamics of extratropical cyclones.

182. Laboratory and Numerical Methods in Atmospheric Science. (3) One hour of lecture and five hours of laboratory per week. Prerequisites: Chemistry 1A-1B, Math 1A-1B, Physics 7A-7C, or equivalents. Fluid dynamics, radiative transfer, and the kinetics, spectroscopy, and measurement of atmospherically relevant species are explored through laboratory experiments, numerical simulations, and field observations. The course is intended for earth and planetary science majors and minors, or for chemistry, physics, astronomy, biology, and engineering majors whose interests may lie in science applied to the atmosphere of Earth and other planets.

185. Marine Geobiology. (2) Two hours of lecture per week. Formerly Geology 185. Interrelationships between organisms and physical, chemical and geological processes in oceans. (F) Berry

195. Senior Honors Course. (3) Individual conferences. Prerequisites: Limited to honors candidates. Formerly Geology H195. Original research and preparation of an acceptable thesis. May be taken during two consecutive semesters or as one research seminar in the senior year and may be substituted for six units of the upper division requirement with consent of major advisor.

201. Advanced Tectonics. (3) Three hours of lecture per week. Prerequisites: Continuum/fluid mechanics at the level of Geophysics 201. Advanced undergraduates are encouraged to attend. Two hours of lecture and one hour of field work per week. Formerly Geophysics 220. Application of chemical thermodynamics and solution chemistry to prediction and interpretation of the consequences of irreversible reactions in inorganic and organic processes.

202. Thermodynamic Analysis of Chemical Reactions in Natural Processes. (3) Three hours of lecture per week. Prerequisites: Mathematics through differential equations and an upper division background in chemistry or geochemistry. Formerly Geology 202. Application of chemical thermodynamics and solution chemistry to prediction and interpretation of the consequences of irreversible reactions in inorganic and organic processes.

203. Introduction to Marine Geochemistry. (3) Three hours of lecture per week. Prerequisites: 50, Chemistry 1A-1B, Mathematics 1A-1B, Physics 7A or consent of instructor. The global water cycle; major chemical cycles; inorganic and organic processes within the hydrosphere; mass balances, fluxes, and reactions in the marine environment from global to submicron scales; relationships to physical, biological, and geological processes; geochemical tracers and tools.

204. Elastic Wave Propagation. (3) Three hours of lecture per week. Prerequisites: 104 or equivalent; 121; Physics 105. Formerly Geophysics 204. Wave propagation in elastic solids; effects of anelasticity and anisotropy; representation theorems; reflection and refraction; propagation in layered media; finite-difference and finite-element methods.

207. Laboratory in Observational Seismology. (3) Three hours of lecture per week. Prerequisites: 121 or 130 or 204, or consent of instructor. Formerly Geophysics 222. Instrumentation and fundamentals of seismological analysis, inversion, and numerical modeling of seismic waveform data to investigate seismic waves, the structure of the earth, and the theoretical bases of the seismological aspects of the earth's interior. (SP)

209. Mineral Thermodynamics. (3) Three hours of lecture and one hour of discussion per week. Formerly Geophysics 209. Physical basis of the thermodynamic properties of minerals, including the use of elastic constants, spectroscopic, and related data. The emphasis is on high-temperature phenomena, including the nature of melting. Thermal defects and non-equilibrium processes, particularly diffusion and the theory of phase transformations, are also discussed.

212. Atmospheric Chemistry and Physics Laboratory. (3) Consent of instructor is needed if taken after Chemistry 125. One hour of lecture and five hours of laboratory per week. Prerequisites: College calculus, chemistry, and physics, or consent of instructor. Fluid dynamics, radiative transfer, and the kinetics, spectroscopy, and measurement of atmospherically relevant species are explored through laboratory experiments, numerical simulations, and field observations. The course is intended for earth and planetary science majors and minors, or for chemistry, physics, astronomy, biology, and engineering majors whose interests may lie in science applied to the atmosphere of Earth and other planets.

216. Active Tectonics. (3) Three hours of lecture per week. Prerequisites: Continuum/fluid mechanics at the level of Geophysics 201. Formerly Geology 216. Application of fluid mechanics to sediment transport and development of river morphology, Form and process in river meanders, the pool-riffle sequence, aggradation, grade, and baselevel.

217. Fluid Flow Geothermometry. (3) Course may be repeated for credit. Three hours of lecture per week. Prerequisites: Consent of instructor. Formerly Geophysics 217. Applied fluid mechanics to sediment transport and development of river morphology, Form and process in river meanders, the pool-riffle sequence, aggradation, grade, and baselevel.

218. Marine Geobiology. (2) Two hours of lecture per week. Formerly Geology 185. Interrelationships between organisms and physical, chemical and geological processes in oceans. (F) Berry

219. Directed Group Study. (1-4) Course may be repeated for credit. Group meetings of various lengths. (SP)

225. Topics in High-Pressure Research. (2) Course may be repeated for credit. Two hours of lecture per week. Prerequisites: Consent of instructor. Formerly Geophysics 225. Analysis of current developments and techniques in experimental and theoretical high-pressure research, with applications in the physical sciences. Topics vary each semester.

235. Characterization of Minerals and Rocks. (3) Two hours of lecture and one hour of laboratory per week. Formerly Geology 235. Introduction to the main methods of characterization, including X-ray diffraction, X-ray fluorescence, electron microprobe, and electron microscopy. Interpretation of data in a geologic context. Advanced undergraduates are encouraged to attend. (SP)

236. Geological Fluid Mechanics. (4) Three hours of lecture and three hours of laboratory per week. Prerequisites: Continuum/fluid mechanics at the level of Geophysics 201. Formerly Geophysics 236. An advanced course in the application of fluid mechanics to the earth sciences, with emphasis on the design and scaling of laboratory and numerical models. Principles of inviscid and viscous flow fluid; dynamic similarity; boundary layers; convection; insta-
C241. Isotope Biogeochemistry. (5) Three hours of lecture and three hours of laboratory per week. Prerequisites: Graduate standing. Use of isotopes in present and past terrestrial and aquatic research. Lectures cover the principles of isotope distribution on Earth (first 10 weeks). The second part of the course focuses on student presentations of case studies and research proposals. In the laboratory, students prepare samples and conduct analytical work. Also listed as Environ Sci, Policy, and Management C220 and Integrative Biology C227. (SP) Amundson, Dawson, Ingram, Mambelli

C242. Glaciology. (4) Three hours of lecture and one hour of consultation per week. Prerequisites: Calculus. A review of the mechanics of glacial systems, including formation of ice masses, glacial flow mechanisms, subglacial hydrology, temperature and heat transport, global flow, and response of ice sheets and glaciers. We will use this knowledge to examine glaciers as geomorphologic agents and as participants in climate change. Also listed as Geography C241. Cuffy

C246. Geologic Oceanography. (4) Three hours of lecture per week. The tectonics and morphology of the sea floor, the geologic processes in the deep and shallow seas, and the processes contained in deep-sea sediments. The course will cover sources and composition of marine sediments, sea level change, ocean sediments, marine stratigraphy, and ocean floor resources. Also listed as Geography C247. Ingram

C249. Solar System Astrophysics. (3) Three hours of lecture per week. The physical foundations of planetary sciences. Topics include planetary interiors and surfaces, planetary atmospheres and magnetospheres, and smaller bodies in our solar system. The physical processes at work are developed in some detail, and an evolutionary picture for our solar system, and each class of objects, is developed. Some discussion of other (potential) planetary systems is also included. Also listed as Astronomy C249. (F) Chiang, de Pater, Jeanloz

250. Advanced Topics in Earth and Environmental Sciences. (3) Course may be repeated for credit. Three hours of seminar per week. Prerequisites: Consent of instructor. Formerly Geology 250. Review of recent literature and discussion of ongoing research at the interface between earth science and environmental science.

251. Carbon Cycle Dynamics. (6) Six hours of lecture per week. Formerly Geology 219. In this course, we will focus on the (unsolved) puzzle of the contemporary carbon cycle. Why is the concentration of atmospheric CO2 changing at the rate observed? What are the terrestrial and oceanic processes that add and remove carbon from the atmosphere? What are the processes responsible for long-term storage of carbon on land and in the sea? Emphasis will be placed on the observations and modeling needed to evaluate hypotheses about carbon sources and sinks. Past records will be examined for clues about sensitivity of carbon processes to climate variations.

254. Advanced Topics in Seismology and Geophysics. (1) Course may be repeated for credit. One hour of lecture per week. Formerly Geophysics 250. Lectures on various topics representing current advances in seismology and geophysics, including local crustal and earthquake processes to regional tectonics, structure of the earth's mantle, and core and global dynamics.

255. Advanced Topics in Earth and Planetary Science. (1) Course may be repeated for credit. One and one-half hours of lecture per week. Must be taken on a satisfactory/unsatisfactory basis. Lectures on various topics representing current advances in all aspects of earth and planetary science. (F,SP)

256. Earthquake of the Week. (2) Course may be repeated for credit. Two hours of discussion per week. Formerly Geophysics 255. Each week, the seismicity of the previous week, in California and worldwide, is reviewed. Tectonics of the region as well as source parameters and waveforms of interest are discussed and placed in the context of ongoing research in seismology.

280. Research in Earth Science. (2) Course may be repeated for credit. Two hours of lecture per week. Must be taken on a satisfactory/unsatisfactory basis. Formerly Geology 280. Weekly presentations to introduce new graduate students and senior undergraduates to current research conducted in the Department of Earth and Planetary Science.

271. Field Geology and Digital Mapping. (4) Students will receive no credit for 271 after taking 101. Seven hours of fieldwork and two hours of lecture per week. Prerequisites: 50 or equivalent introductory course for majors. Geologic mapping, field observation, and problem solving in the Berkeley Hills and environs leading to original interpretation of geologic processes and history from stratigraphic, structural, and lithological investigations. Integration of the Berkeley hills geology into the tectonic and paleo-climatic record of the Coast Ranges and California as a whole through systematic field mapping in key localities and reading of original literature. Training in digital field mapping, use of digital base maps, and use of global positioning systems. (SP) Brimhall

280. Research. (2-12) Course may be repeated for credit. Formerly Geology 280. Individual conferences to be arranged. Provides supervision in the preparation of an original research paper or dissertation. (F,SP)

290. Seminar. (2-6) Course may be repeated for credit. Two to six hours of lecture/discussion per week. Formerly Geology 290. Topics will be announced each semester.

298. Directed Group Study for Graduates. (1-9) Course may be repeated for credit. Occasional group meetings and individual conferences. Section 1 (fall) must be taken on a satisfactory/unsatisfactory basis. Other sections may be taken on letter-grade basis.

Professional Courses

300. Professional Preparation: Supervised Teaching of Geology and Geophysics. (1-6) Course may be repeated for credit. One hour of discussion per week. Must be taken on a satisfactory/unsatisfactory basis. Prerequisites: Graduate standing and appointment as graduate student instructor. Formerly Geology 300. Discussion, curriculum, class observation, and practice teaching in geology, geophysics, and earth science.

C301. Communicating Ocean Science. (2) Two and one-half hours of lecture, plus field work in a local school. Prerequisites: One course in introductory biology, geology, chemistry, physics, or marine science required and interest in ocean science. Class takes place at Lawrence Hall of Science. For graduate students interested in improving their ability to communicate their scientific knowledge by teaching ocean science in elementary schools. The course will combine instruction in inquiry-based teaching methods and learning pedagogy with about eight weeks of supervised teaching experience in a local school classroom with a partner. Thus, students will practice communicating science and receive mentoring. Also listed as Integrative Biology C215. (SP)

401. The Use of the Electron Microprobe. (2) Course may be repeated for credit. Eight hours of laboratory per week. Must be taken on a satisfactory/unsatisfactory basis. Prerequisites: Graduate standing and consent of instructor. Formerly Geology 401. The operation of an electron microprobe and ancillary equipment for the analysis of inorganic solids.

East Asian Languages and Cultures

(College of Letters and Science)

Department Office: 104 Durant Hall, (510) 642-3480 eail.berkeley.edu
Chair: Alan Tansman, Ph.D.

Professors

IH. Mark Horton, Ph.D. University of California, Berkeley. Classical Japanese literature
Jeffrey K. Riegel (The Louis B. Agassiz Professor of Chinese). Ph.D. Stanford University. Early Chinese texts
Robert Shari (The D. Chen Distinguished Professor of Buddhist Studies). Ph.D. University of Michigan. Buddhist studies
Alan Tansman (The Louis B. Agassiz Professor of Japanese). Ph.D. Yale University. Modern Japanese literature
Haruo Aoki (Emeritus). Ph.D. University of California, Berkeley
Crew Birch (The Louis B. Agassiz Professor of Chinese Emeritus). Ph.D. University of London
Kun Chang (Emeritus). Ph.D. Yale University
John C. Jameson (Emeritus). Ph.D. University of Wisconsin
Suzan Malossi (Emerita). Ph.D. Columbia University
Pang-Hsin Ting (Emeritus). Ph.D. University of Washington
Stephen West (The Louis B. Agassiz Professor of Chinese Emeritus). Ph.D. University of Michigan

Associate Professors

Robert Ashmore, Ph.D. Harvard University. Classical Chinese literature
Yoko Hasegawa, Ph.D. University of California, Berkeley. Japanese linguistics
Andrew Jones, Ph.D. University of California, Berkeley. Modern Chinese literature and popular culture
Paula Varsano, Ph.D. Princeton University. Classical Chinese literature
Sophie Vogt, Ph.D. Harvard University. Modern literature, comparative literature
Duncan Wright, Ph.D. Harvard University. Buddhist studies
James E. Bosson (Emeritus). Ph.D. University of Washington

Assistant Professors

Daniel O'Neill, Ph.D. Yale University. Modern Japanese literature
William Schaefer, Ph.D. University of Chicago. Modern Chinese literature and culture
Jiwon Shin, Ph.D. Harvard University. Korean literature

Lecturers

Yasuko Konno Baker, M.A.
Wakae Kambara, M.A.
H.H. Hsueh, M.A.
Li Liu, Ph.D.
Kay Richards, M.A.
Chika Shibahara, M.A.
Miwako Tomizuka, B.A.
Yang Yang, M.A.
Claire You, M.A.
Lihua Zhang, Ph.D.

Undergraduate and Graduate Advisers: Consult department website.

The Undergraduate Majors

The Department of East Asian Languages and Cultures offers undergraduate majors in the languages and cultures of China and Japan, minors in Chinese, Japanese, Korean, and Buddhism, and honors programs, all of which introduce the vast and variegated literary, artistic, philosophical, and cultural legacies of East Asia and their transformations in modernity. The courses of study are designed to train students in the humanistic investigation of major East Asian traditions, through a curriculum that centers on the acquisition of the modern and classical forms of the languages, the informed and engaged reading of a wide variety of East Asian texts in their historical and cultural contexts, and the development of effective writing skills and critical thinking.
Chinese
Prerequisites: (Must earn a grade of C or higher)
• Chinese 1A, 1B (5, 5): Elementary Chinese
• Chinese 7A or 7B (4): Introduction to Chinese Literature (must be taken at Berkeley)
Lower Division. (minimum of three courses and 12 units)
• Chinese 10A, 10B (5 units, 5 units): Intermediate Chinese*
• Chinese 7A or 7B (4): Introduction to Chinese Literature (whichever was not taken as a prerequisite)
Upper Division. (minimum of eight courses and 32 units; minimum GPA of 2.0)
• Chinese 100A, 100B (5, 5): Advanced Chinese*
• Chinese 110A, 110B (4, 4): Introduction to Literary Chinese
• One modern Chinese literature course (C155, C156, or C157)
• One East Asian Languages upper division course (e.g., EA 100, EA 102)
• Two electives selected in consultation with the adviser.
Total units required: 62

Japanese
Prerequisites: Prerequisites (Must earn a grade of C or higher)
• Japanese 1A, 1B (5, 5): Elementary Japanese
• Japanese 7A or 7B (4): Introduction to Japanese Literature (must be taken at Berkeley)
Lower Division. Lower Division (minimum of three courses and 12 units)
• Japanese 10A, 10B (5, 5): Intermediate Japanese*
• Japanese 7A or 7B (4): Introduction to Japanese Literature (whichever was not taken as a prerequisite)
Upper Division. (minimum of eight courses and 32 units; minimum GPA of 2.0)
• Japanese 100A, 100B (5, 5): Advanced Japanese*
• Japanese 120R: Introduction to Classical Japanese
• One classical Japanese literature course (J130, J132, J134, J140, J142, J144, J146)
• One modern Japanese literature course (J155 or J159)
• One East Asian Languages upper division course (e.g., EA 100, EA 102)
• Two electives selected in consultation with the adviser.
Total units required: 62
*Please note: Students with previous language experience will be required to take a placement exam with Department language coordinators. Students who place out of language courses will be required to take additional advisor-approved literature or culture courses offered by the Department in order to meet the above unit requirements.

The Undergraduate Minors
The Department of East Asian Languages and Cultures offers four minor programs: Buddhism, Chinese, Japanese, and Korean. Each minor requires 20 units and five upper division courses (except where otherwise noted) in addition to fourth-semester language proficiency.

Minor in Buddhism: Proficiency in Chinese or Japanese equivalent to 10B. (Other relevant Asian languages may be substituted with adviser approval.) Five upper division courses: three courses in Buddhism; two additional courses chosen in consultation with the adviser. Buddhism 50 may be substituted for one of the five courses.

Minor in Chinese: Chinese 10B or equivalent. Five upper division courses: three courses in Chinese; two additional East Asian Language courses. Either 7A or 7B may be substituted for one of the five courses.

Minor in Japanese: Japanese 10B or equivalent. Five upper division courses: three courses in Japanese; two additional East Asian Language courses. Either 7A or 7B course may be substituted for one of the five courses.

Minor in Korean: Korean 10B or equivalent. Five upper division courses: three courses in Korean; two additional East Asian Language courses. Either 7A or 7B course may be substituted for one of the five courses.

Note: All minor courses require adviser approval and must be taken for a letter grade.

Honor’s Program
A senior undergraduate student who has completed 12 units of upper division language courses in the department, and who has a grade-point average of 3.5 in those courses and an overall average of 3.0 may apply for admission to the honors program. If accepted, the student will enroll in an honors course (any H195 course) for two consecutive semesters leading to the completion of an honors thesis, which must be submitted at least two weeks before the end of the semester in which the student expects to graduate. While enrolled in the honors program, the student will undertake independent advanced student study under the guidance of the student’s honors thesis adviser. Upon completion of the program, a faculty committee will determine the degree of honors to be awarded (Honors, High Honors, Highest Honors), taking into consideration both the quality of the thesis and overall performance in the department. Honors will not be granted to a student who does not achieve a minimum cumulative grade-point average of 3.3 in all undergraduate work in the University by the time of graduation.

Graduate Programs
M.A. and Ph.D. programs are offered in Chinese Language and Literature and in Japanese Language and Literature. Within either area of specialization, students may focus on literary criticism, comparative studies, cultural history, linguistics, a specified period, or the like, but in every case students will be expected to acquire a solid grounding in the classical and modern versions of the primary language.

The primary purpose of our degree training is to prepare students to become scholars and teachers of advanced courses at the university level. Persons aspiring to a modern-language teaching career will not find the program suited to their needs.

Information about the graduate program can be obtained from the department office.

East Asian Languages

Lower Division Courses
C50. Introduction to the Study of Buddhism. (4)
Three hours of lecture and one hour of discussion per week. This introduction to Buddhism will consider materials drawn from various Buddhist traditions of Asia, from ancient times down to the present day. However, the course is not intended to be a comprehensive or systematic study; rather than aiming at breadth, the course is designed around key themes such as ritual, image veneration, mysticism, meditation, and death. The overarching emphasis throughout the course will be on the hermeneutic difficulties attendant upon the study of religion in general, and Buddhism in particular. Also listed as South and Southeast Asian Studies C52 and Group in Buddhist Studies C50. (F,SP) Staff

84. Sophomore Seminar. (1,2) Course may be repeated for credit as topic varies. One hour of seminar per week for 15 weeks. A total of two and one-half hours of seminar per week per unit for 10 weeks. Two hours of seminar per week for eight weeks. Three hours of seminar per week per unit for five weeks. Sections 1-2 graded on a passed/not passed basis. Sections 3-4 to be graded on a letter grade basis. Prerequisites: At discretion of instructor. Sophomore seminars are small interactive courses offered by faculty members throughout all areas of the campus. Sophomore seminars offer opportunity for close, regular intellectual contact between faculty members and students in the crucial second year. The topics vary from department to department and semester to semester. Enrollment limited to 15 sophomores. (F,SP)

98. Directed Group Study for Lower Division Students. (1-4) Enrollment is restricted; see the Introduction to Courses and Curricula section of this catalog. Hours to be arranged. Must be taken on a passed/not passed basis. Prerequisites: Lower division standing, 3.5 GPA. Small group instruction in topics not covered by regularly scheduled courses. (F,SP) Staff

99. Independent Study for Lower Division Students. (1-4) Enrollment is restricted; see the Introduction to Courses and Curricula section of this catalog. Hours to be arranged. Must be taken on a passed/not passed basis. Prerequisites: Lower division standing, 3.5 GPA. Independent study in topics not covered by regularly scheduled courses. (F,SP)

Upper Division Courses
100. Reading Alternative Space. (4) Three hours of lecture per week. This course examines Japanese and Korean cultural phenomena from the 20th-century perspective. It will focus on the investigation of Korean literary and visual practices that hypothesize an alternative sociocultural realm. In particular, we will consider various modes of spatial narration (utopic, dystopic, cosmological, global, nautical, urban, rural, architectural, and institutional) that foreground the motif of a overseas journey. The course focuses particularly on the issues of identity in the context of various narrative itineraries and considers the social, historical, and cultural moments that produced them. All readings will be in English. (F,SP) Shin

101. Catastrophe, Memory, and Narrative: Comparative Responses to 20th-Century Atrocity. (4) Three hours of lecture per week. This course examines Japanese and Jewish responses to 20th-century atrocity. We will pay close attention to how catastrophic events are mourned and memorialized in memoirs, fiction, poetry, feature films and filmed testimonies, trials and hearings, and debates and popular culture. Throughout, we will be analyzing how cultures with vastly different artistic, religious, and philosophical traditions mourn distinctive historical events. Is the process of mourning universal? Can nations mourn, and can their mourning be compared? (F,SP) Tansman

102. Fantastic Histories. (4) Three hours of lecture per week. This course examines Japanese and American fiction. We will consider how the close intertwining of history and the strange in early Chinese writing was critically reappropriated in early 20th-century East Asian fiction; how imaginary Chinas have informed experiments with writing the past in Europe and Latin America; and how such experiments have provided contemporary Chinese writers with new lenses through which to explore their own histories. All readings will be in English. (F,SP) Schafer

104. Tales of Two Empires: Literature and History in the Chinese 19th Century. (4) Three hours of lecture per week. The Chinese 19th century was a tumultuous and pivotal era, one which witnessed both the zenith and the precipitous decline of the Qing dynasty, a vasty, the complex and pivotal relationship between a Chinese empire and the forces of global imperialism, and the consequent advent of a new colonial modernity in China. In this course, we will study these world-
106. Expressing the Inefiable in China and Beyond: Themes in Poetic Writing. (4) Three hours of lecture per week. This course will explore how the Chinese- and English-language literary traditions (broadly defined) delineate the realm of the inefiable, and consider the implications of the interaction between the writing and reading of poems, songs, and a selection of prose pieces, from the uses of figurative language and prosody to genre and canon formation. In addition to our understanding of how writing achieves its aims, some attention will be given to nonverbal modes of expression, including calligraphy and painting—and attempts to render them in writing. Over this course of study, students will not only refine their sensitivity to the power of artistic modes of indirectness, but will also hone their skills in close reading, analytical writing, and oral expression. All readings will be in English. (F,SP) Varsano

108. Revising the Classics: Chinese and Greek Poetry in Translation. (4) Three hours of lecture per week. An introductory course on Chinese poetry, both ancient and modern, in English translation. The course will explore poetic translation, across languages, cultures, and historical ages, not merely from the perspective of the "accuracy" with which a classic text is represented in the translation, but as a window into the nature of poetic tradition and poetic writing itself. Works to be covered in the course will be primarily translated from classical Chinese and modern poems that display an interest in allowing a comparative discussion of the course's central themes, a significant amount of reading, also in translation, from ancient and modern Greek poetry will be included as well. The goal of the class is not simply to gain familiarity with Chinese poetry and poets, but more fundamentally to gain skill and sophistication in reading, responding to, and thinking about poetry. (F,SP) Ashmore

C120. Buddhism on the Silk Road. (4) Three hours of lecture per week. This course is both an historical introduction to the Silk Road, understood as an ever-changing series of peoples, places, and traditions, as well as an introduction to the study of those same peoples, places, and traditions in the modern period. In this way, the class is intended both as a guide to the extant textual, archeological, and art historical evidence from the Silk Road, but also as a framework for thinking about what it means to study Asia and Asian religions in the context of a contemporary American classroom. All readings will be in English. Also listed as Group in Buddhist Studies C120. (F,SP) Staff

C122. Buddhist Meditation: Historical, Doctrinal, and Ethnographic Perspectives. (4) Three hours of lecture and one hour of discussion per week. This course will explore the nature and function of Buddhist meditation as it developed within various Buddhist traditions of South, Southeast, and East Asia. Emphasis will be on the historical, doctrinal, and monastic and extra-monastic regimens associated with Buddhist meditation practices. We will make use of a wide variety of primary and secondary readings as well as visual materials (including films) to attempt to place the historical and doctrinal accounts within their cultural and institutional contexts. Also listed as Group in Buddhist Studies C122. (F,SP) Staff

C124. Buddhism and Film. (4) Two to three hours of lecture and three to four hours of discussion/film screening per week. This course will use the medium of film to explore various themes in the study of Buddhism. At the same time, we will use ideas culled from Buddhism to reflect back on the nature and power of film. We will also explore a wide variety of international and domestic films, from Hollywood blockbusters to small independent films and documentaries. Themes to be considered include the epistemic status of the view of reality, the place of imagination and visualization in Buddhist meditation and ritual, contesting Asian and Western notions of Buddhist authority, Orientalism, and the role of projection and fantasy in cinematic representations of Buddhism. The films will be accompanied by primary and secondary readings in Buddhist history and literature, religious studies, and film theory. Also listed as Group in Buddhist Studies C124. (F,SP) Staff

C126. Buddhism and the Environment. (4) Three hours of lecture per week. Prerequisites: One lower-division course in Buddhist Studies or consent of instructor. A thematic course on Buddhist perspectives on nature and environmental issues. The first half of the course focuses on East Asian Buddhist cosmological and doctrinal perspectives on the place of the human in nature and the relationship between the salvific goals of Buddhism and nature. The second half of the course examines Buddhist ethics, economics, and activism in relation to environmental issues in contemporary Southeast Asia, East Asia, and America. Also listed as Group in Buddhist Studies C126. (F,SP) Williams

C128. Buddhism in Contemporary Society. (4) Three hours of lecture per week. A study of the Buddhist tradition as it is found today in Asia. The course will focus on specific living traditions of East, South, and/or Southeast Asia. Themes to be addressed may include contemporary Buddhist ritual practices; funerary and mortuary customs; the relationship between Buddhism and other religious traditions; the relationship between Buddhism and the state; Buddhist monasticism and its relationship to the laity; Buddhist ethics; Buddhist "modernism;" and so on. Also listed as South and Southeast Asian Studies C145 and Group in Buddhist Studies C128. (F,SP) Staff

C130. Zen Buddhism. (4) Three hours of lecture and one hour of discussion per week. This course will introduce students to the Zen Buddhist traditions of China and Japan, drawing on a variety of disciplinary perspectives (history, anthropology, philosophy, and so on). The course will cover doctrinal problems (problems involved in interpretation) entailed in understanding a sophisticated religious tradition that emerged in a time and culture very different from our own. Also listed as Group in Buddhist Studies C130. (F,SP) Staff

198. Directed Group Study. (1-4) Enrollment is restricted; see the Introduction to Courses and Curricula section of this catalog. Hours to be arranged. Must be taken on a pass/no pass basis. Prerequisites: Junior or senior standing. Three hours of seminar per week. Group study in Buddhist Studies C120 (F,SP) Staff

199. Independent Study. (1-4) Enrollment is restricted; see the Introduction to Courses and Curricula section of this catalog. Hours to be arranged. Must be taken on a pass/no pass basis. Prerequisites: Junior or senior standing. Independent study in topics not covered by regularly scheduled courses. (F,SP) Staff

Graduate Courses

200. Proseminar: Approaches to East Asian Studies. (2,4) Three hours of seminar per week. This course is a pro-seminar required for all entering graduate students in the field of East Asian Languages and Cultures. The course will introduce graduate students to the major thematic approaches in East Asian Studies. The course will also explore a range of methodological issues and the relationship between the study of East Asian Literature, thought, religion, and culture in particular. Supervising faculty change from year to year, as does the focus of the seminar. (F)

C220. Seminar in Buddhism and Buddhist Texts. (3,4) Three hours of seminar per week. Content varies with student interests. The course will focus on classical Buddhist texts that exist in multiple re- censens and languages, including Chinese, Sanskrit, and Tibetan. Also listed as Group in Buddhist Studies C220. (F,SP) Staff

C240. Readings in Chan and Zen Buddhist Literature. (2,4) Course may be repeated for credit as topic varies. Three hours of seminar per week. Prerequisites: Consent of instructor. Formerly Buddhism 225.

This graduate seminar is an intensive introduction to primary sources used in the study of Chan and Zen Buddhism. It is designed to be of interest to a range of students working on premodern Chinese and Japanese culture (literature, philosophy, intellectual his- tory, religion, art, etc.). The seminar will also introduce students to Asian and Western language reference tools. Prerequisites: Background in an East Asian language, including web resources. The content of the course will vary from semester to semester to best accommodate the needs and interests of students. Also listed as Group in Buddhist Studies C240. (F,SP) Sharf

Chineseness

Instructor approval is recommended for enrollment in language courses.

Courses numbered 180-189 are lecture courses given in English.

Lower Division Courses

1A-1B. Elementary Chinese. (5,5) Five hours of lecture per week. Prerequisites: A is prerequisite to B. (F,SP) Staff

1AX-1BX. Elementary Chinese for Mandarin Speakers. (3,3) Students will receive no credit for 1AX-1BX after taking 1, 1A-1B, 1AX-1BY. Three hours of lecture per week. Prerequisites: Chinese 1AX is prerequisite to 1BX; or consent of instructor. Elementary-level courses designed for those who speak Mandarin but who do not read or write Chinese. The courses emphasize oral and traditional characters, introduce functional vocabulary, and provide a systematic review of grammar. (F,SP) Staff

1AY-1BY. Elementary Chinese for Speakers of Other Dialects. (5,5) Students will receive no credit for 1AY-1BY after taking 1, 1AX-1BX, or 1AX-1BY. Five hours of lecture per week. Prerequisites: Chinese 1AX is prerequisite to 1BY. These courses are designed for students who were raised in an environment where a Chinese dialect other than Mandarin Chinese was spoken, who speak or merely understand the dialect, and who have had minimal exposure to reading and/or writing in Chinese. This series of courses is designed to help these students develop language skills in Mandarin, particularly that of pronunciation. The courses prepare students to negotiate a simple Mandarin environment. After completing 1BY, students are equipped to enter the Mandarin track for intermediate language training. (F,SP) Staff

7A. Introduction to Premodern Chinese Literature and Culture. (4) Students will receive no credit for 7A after taking 181A, but they can remove a deficient grade in 181A by taking 7A. Three hours of lecture and one hour of discussion per week. An introduction to Chinese literature in translation, including novels and verse. The course is designed for students who do not read or write Chinese. (F,SP) Staff

7B. Introduction to Modern Chinese Literature and Culture. (4) Students will receive no credit for 7A after taking 181A, but they can remove a deficient grade in 181A by taking 7A. Three hours of lecture and one hour of discussion per week. An introduction to Chinese literature in translation, including novels and verse. The course is designed for students who do not read or write Chinese. (F,SP) Staff
24. Freshman Seminar. (1) Course may be repeated for credit as topic varies. One hour of seminar per week. Three hours of seminar per week for eight weeks. Sections 1 and 3 to be graded on a passed/not passed basis. Sections 2 and 4 to be graded on a letter-grade basis. The Freshman Seminar Program has been designed to provide new students with the opportunity to explore an intellectual topic with a faculty member in a small-seminar setting. Freshman seminars are offered in all campus departments, topics vary from department to department and from semester to semester.

25. Sophomore Seminar. (1.2) Course may be repeated for credit as topic varies. Seminar format. Prerequisites: Priority given to freshmen and sophomores. Freshman and sophomore seminars offer lower division students the opportunity to explore an intellectual topic with a faculty member and a group of peers in a small-seminar setting. These seminars are offered in all campus departments; topics vary from department to department and from semester to semester.

26. Sophomore Seminar. (1.2) Course may be repeated for credit as topic varies. One hour of seminar per week per unit for 15 weeks. One and one-half hours of seminar per week per unit for 10 weeks. Two hours of seminar per week per unit for eight weeks. Three hours of seminar per week per unit for five weeks. Sections 1-2 to be graded on a passed/not passed basis. Sections 3-4 to be graded on a letter-grade basis. The Freshman Seminar Program has been designed to provide new students with the opportunity to explore an intellectual topic with a faculty member in a small-seminar setting. Sophomore seminars offer opportunity for close, regular intellectual contact between faculty members and students in the crucial second year. The topics vary from department to department and from semester to semester. Enrollment limited to 15 sophomores. (F,SP)

98. Directed Group Study for Lower Division Students. (1-4) Enrollment is restricted; see the Introduction to Courses and Curricula section of this catalog. Hours to be arranged. Must be taken on a passed/not passed basis. Prerequisites: Lower division standing, 3.5 GPA. Small group instruction in topics not covered by regularly scheduled courses. (F,SP)

99. Independent Study for Lower Division Students. (1-4) Enrollment is restricted; see the Introduction to Courses and Curricula section of this catalog. Hours to be arranged. Must be taken on a passed/not passed basis. Prerequisites: Lower division standing, 3.5 GPA. Independent study in topics not covered by regularly scheduled courses. (F,SP)

Upper Division Courses

100A-100B. Advanced Chinese. (5-5) Five hours of lecture per week. Prerequisites: 106; 100A is prerequisite to 100B. Reading and discussion, in Chinese, of modern Chinese texts, literary, political and general, in a variety of styles. Assignments to develop oral and writing skills.

100AX-100BX. Intermediate Chinese for Mandarin Speakers. (3-3) Students will receive no credit in 100AX-100BX after taking 100A or 100A-100B. Three hours of lecture per week. Prerequisites: Chinese 100B or consent of instructor. This course is designed to introduce students to the reading, speaking, and writing skills of Mandarin Chinese. It is for students who speak Mandarin and have intermediate-level knowledge of reading and writing in Chinese. The goal of this course is to introduce modern Chinese society through reading materials and discussion. The reading materials include stories, essays, and plays, mostly by leading writers of recent decades.

101. Fourth-Year Readings: Literature. (4) Three hours of lecture per week. Prerequisites: 100B or 100BX; consent of instructor. This course is designed to elevate abilities in speaking, reading, and writing. Students will read the works of famous Chinese writers. Major adaptations of these writings are also used. Students' writings will be circulated, and students will act in plays they write.

102. Fourth-Year Readings: Social Sciences and History. (4) Three hours of lecture per week. Prerequisites: 100B or 100BX or consent of instructor. This course is designed to further improve abilities in speaking, reading, and writing. Students will read Chinese newspapers and other sources of social, political, and historical writings. They will circulate their works as part of the class requirements. (F,SP) Staff

103. Introduction to Literary Chinese. (4) Three hours of lecture per week. Prerequisites: 100B is recommended but not required. Formerly 2A. The first half of a one-year introductory course in literary Chinese, introducing key features of grammar, syntax, and usage, along with the intensive study of a set of readings in the language. Readings are drawn from a variety of pre-Han and Han-Dynasty sources. (F) Staff

110B. Introduction to Literary Chinese. (4) Three hours of lecture per week. Prerequisites: 110A. Formerly 2B. The second half of a one-year introductory course in literary Chinese, continuing the set of grammatical review topics from the first semester, and giving basic coverage of more relevant issues in the history of the language and writing system, and the use of basic reference sources. (F) Staff

111. Fifth-Year Chinese A. (4) Three hours of lecture per week. Prerequisites: 102. This course is designed to bring up the students to advanced-high competence in all aspects of modern Chinese; it aims to prepare students for research or employment in a variety of China-related fields. Materials are drawn from native-speaker target publications, including modern Chinese literature, film, and readings on contemporary issues. Radio and TV broadcasts will also be included among the teaching materials. Texts will be selected, in part, according to the students' interests. With the instructor's guidance, students will conduct their own research projects based on specialized readings in their own fields of study. The research projects will be presented both orally and in written form by the end of the semester. (F,SP) Staff

112. Ancient Chinese Prose. (4) Three hours of lecture per week. Prerequisites: 100A. Readings in historical, religious, and philosophical texts of the Zhou, Han, and later periods from printed and manuscript sources.

113. Ancient Chinese Poetry. (4) Three hours of lecture per week. Prerequisites: 110A. Readings from the Shijing, the Chu ci, and selections from other early compilations of poetry.

114. Readings in Early Medieval Literature. (4) Three hours of lecture per week. Prerequisites: 110B and one upper division course in classical Chinese. A different theme or literary form will be studied each semester.

115. Readings in Vernacular Chinese Literature. (4) Three hours of lecture per week. Prerequisites: 100B or 100BX (may be taken concurrently). A critical study of pre-modern Chinese fiction.

116. Modern Chinese Literature. (4) Three hours of lecture per week. Prerequisites: 100B or 100BX (may be taken concurrently). This course will introduce students to selected works of modern Chinese literature produced in the first half of the 20th century, as well as films and historical novels. Writers such as Lu Xun, Shen Congwen, Eileen Chang, and others attempt to make themselves “at home” in a world profoundly dislocated by the forces of colonialism, war, and revolution? We will examine the politics of literary style, questions of nationalism, representations of gender, and the problem of colonial modernity in these texts. All primary texts are presented in the original Chinese, supplemented by critical and biographical articles in English.

117. Contemporary Chinese Literature. (4) Three hours of lecture per week. Prerequisites: 100B or 100BX (may be taken concurrently). This course explores popular, realistic, and avant-garde literature from mainland China and Taiwan, and will consider how writers have engaged with the cultural dislocations of modernity by exploring questions such as the presentation of cultural and gender identities and the politics of memory and place. Central to our discussion will be the problem of how literature not only reflects but also critically engages with historical and cultural experience through a variety of genres. A crucial component of this course will be the development of skills in close, critical, and historically contextualized reading.

118. Reading Chinese Citie$s. (4) Three hours of lecture per week. Prerequisites: 100B or 100BX (may be taken concurrently). Chinese cities are the sites of complicated global/local processes of change and are increasingly incorporated into the world system. Understanding Chinese cities is key to analyzing the dramatic transformation of Chinese society and culture. The course will attempt to think about Chinese cities in more textural ways. How are urban forms and urban spaces produced through processes of social, political, and ideological conflict? How
161. Structure of the Chinese Language. (4) Three hours of lecture per week. Prerequisites: 100A, Linguistics 5 or 100, Chinese dialects, Mandarin phonology, and Mandarin grammar.

180. The Story of the Stone. (4) Three hours of lecture per week. For 180R. This course will center around intensive reading and analysis of Cao Xueqin’s 18th-century masterpiece of Chinese fiction, The Story of the Stone (also known as the Dream of the Red Chamber). Students will be introduced to the literary, cultural, historical, and material world from which this work emerged, as well as various approaches to the world within the text.

182. Death and Funerary Practice in China. (4) Three hours of lecture per week. This course examines funerary practices in Chinese history, as a means to explore ideas about how the corpse is understood, and how the disposition of the corpse functioned as a liminal space onto which debates about cultural values could be projected. Such debates include discussions about the appropriate degree of mourning rites in Warring States thought, filiality and cremation in Confucian discourse, mummification and auto-cremation in Buddhism, and issues surrounding burial in contemporary China. (FSP) Staff

183. Traditional Chinese Culture. (4) Three hours of lecture and discussion per week. This course will consist of lectures that provide a general overview of traditional Chinese culture from the early Zhou through the late medieval and early modern times. Special emphasis is given to the origins and development of philosophy, art, religion, prose, and poetry. The subjects to be covered include the Chinese language and writing system, the Chinese classical canon, the schools of Warring States philosophy, historiography, and religion. Students will read texts by Taoism, hero cults and ancestor worship, burial practice, the introduction of Buddhism and its role in early Chinese society, and the birth of Chinese fiction. (FSP) Staff

184. Sonic Culture in China. (4) Three hours of lecture per week. Prerequisites: 7A or 7B, and/or previous coursework in either Chinese literature or culture, and music. This course explores the aesthetics and politics of sound—both musical and otherwise—in Chinese cultures. Through musical discourse and literary discourses on music, we trace the ways in which sound has been produced, heard, understood, and debated in both pre-modern and modern China. Topics include Confucian musical theory, Daoist hermeneutics, music, and poetry; the impact of recording technology and Western music; urban popular musics, sound and cinema, and contemporary soundscapes. Also listed as Music C134C.

C185. Introduction to Chinese Philosophy. (4) Three hours of lecture per week. Formerly Oriental Languages 167. A survey of the history of Chinese philosophy from late Chou times through the Ch’ing dynasty. Treated in some depth are a number of major Chinese thinkers including Confucius, Mencius, Huain Tzu, Mo Tzu, Chuang Tzu, Tung Chung-shu, Chu Hsi, Wang Yang-ming, and Tai Chen. One of the major themes presented in the course is the development of Chinese ethical theory and the role of language in moral education. Also listed as Philosophy C167. (F)

186. Confucius and His Interpreters. (4) Three hours of lecture per week. This course examines the different spheres of meaning that have been formed through interpretations of the person and teachings of Confucius. We will trace how his thought was attributed to Confucius by his near-contemporaries and by later generations, situating these readings within the social and political order of their times. We will examine how Confucianism became the defining force of Chinese society, shaping political, social roles, and intellectual commitments, and how various interpretive communities in turn have shaped the understanding of the Confucian canon. We will also ask what the figure of Confucius means for these various groups, and how this figure was defined through ritual and material culture. Further, we will consider Confucian responses to other intellectual forces, such as Legalism, Daoism, Buddhism, and Christianity, and reimagination of Confucianism in the light of perceived challenges of modernity. Class discussion will focus on readings from primary texts, but will also take into account recent scholarship on the intellectual and social history of the Confucian tradition. (FSP)

188. Popular Culture in 20th-Century China. (4) Three hours of lecture per week. This course is an introduction to media culture in 20th-century China, with an emphasis on photography, cinema, and popular music. The course places these productions in historical and cultural contexts, especially in the genre of travel narrative and in the context of China, Hong Kong, and Taiwan from the turn of the last century to the beginning of the 21st. Students will also be introduced to a number of approaches to thinking about and analyzing popular cultural phenomena.

189. Chinese Landscapes: Space, Place, and Travel. (4) Three hours of lecture per week. Prerequisites: One previous course in literature or cultural studies. What do landscapes “do”? How do landscape images mediate experiences of land, nature, and other peoples? How do landscapes map one’s place in the world, shaping both cultural identities and real geographic spaces? Can landscapes “travel”? This course explores such questions by examining one of the world’s longest-running traditions of landscape representation. We will consider such landscape genres as poetry, prose description, fiction, travel narrative, maps, painting, and photography, and how these images affect the experience of imperial expansion, colonization, and globalization. We will also consider China’s places in thinking about landscape and travel in the West. (FSP) Schaefer

H195A-H195B. Honors Course. (2-5;2-5) Hours to be arranged. Credit and grade to be awarded on departmental basis. Prerequisites: Senior honors standing in East Asian Languages, 3.5 GPA in major, 3.3 overall. Directed independent study and preparation of senior honors thesis. Limited to senior honors candidates in East Asian Languages (for description of Honors Program, see Index).

198. Directed Group Study. (1-4) Enrollment is restricted; see the Introduction to Courses and Curricula section of this catalog. Hours to be arranged. Must be taken with a passing/pass-failed basis. Prerequisites: Junior standing. Small group instruction in topics not covered by regularly scheduled courses. (FSP)

199. Independent Study. (1-4) Enrollment is restricted; see the Introduction to Courses and Curricula section of this catalog. Hours to be arranged. Must be taken with a passing/pass-failed basis. Prerequisites: Junior standing. Independent study in topics not covered by regularly scheduled courses. (FSP)

220. Seminar in Philological Analysis of Ancient Chinese Texts. (2.4) Three hours of seminar per week. Readings vary from year to year and are drawn from a wide variety of philosophical and historiographical sources.

222. Early Chinese Thought. (2.4) Course may be repeated for credit as topic varies. Three hours of seminar per week. Prerequisites: At least one year of Classical Chinese. An analytical exploration of the central texts of Warring States (453-221 BCE) philosophy and thought, focusing on the interactions between philosophical schools and their contextual environments

C223. Readings in Chinese Buddhist Texts. (2.4) Course may be repeated for credit as topic varies. Three hours of seminar per week. This seminar is an intensive introduction to various genres of Buddhist literature and classical Chinese literature, including translations of Sanskrit and Central Asian scriptures, Chinese commentaries, philosophisal treatises, hagiographies, and sectarian works. It is intended for graduate students who already have some facility in classical Chinese. It will also serve as a tools and methods course, covering the basic reference works and secondary scholarship in the field of East Asia Buddhism. The content of the course will be adjusted from semester to semester to best accommodate the interests of students. Also listed as Group in Buddhist Studies C2223. (FSP) Staff

230. Seminar in Chinese Literary History. (2.4) Course may be repeated for credit as topic varies. Three hours of seminar per week. Prerequisites: Consent of instructor. This course is intended to trace the evolution of Chinese literary history through Five Dynasties period. Topics vary from semester to semester and include poetry, biography, historiography and external relations.

234. Texts on the Civilization of Medieval China. (2.4) Three hours of seminar per week. Course content varies with interests of students.

236. Seminar in Texts on Chinese Drama and Dramatic Criticism. (2.4) Course may be repeated for credit. Three hours of seminar per week. Prerequisites: 138 or consent of instructor; two other classical Chinese courses. Readings in dramas and/or dramatic criticism from the Yuan and Ming eras and detailed examination of primary and secondary sources on the history, development, and analysis of dramatic texts. Topic of the course changes with the year.

242A/242B. Genre and Method in Traditional Chinese Texts. (2.4) Three hours of lecture per week. Prerequisites: 242A and 100B: 242B is a prerequisite to 242B; consent of instructor. Introduction to the history of Chinese textual production. Detailed close reading of the texts and training in the methodologies of solving problems of language, theme, structure, imagery, and metaphor. (FSP) Staff

245. Chinese Literatures and Cultures in Global Context. (2.4) Course may be repeated for credit as topic varies. Three hours of seminar per week. This
course explores relations of Chinese literature and culture to other parts of Asia, Africa, Latin America, or the West, ranging from specifc global transactions to comparative perspectives, and ranging within across different historical periods. Specific topics vary from year to year.

255. Late Imperial Fiction and Drama. (2,4) Three hours of seminar per week. This course explores the canonical texts of the late-imperial period, placing them in the context of contemporary cultural study. Modern course focuses on a limited set of texts each time it is taught; the aim is to introduce students to the primary issues in scholarship of late-imperial fiction and drama by means of several of these.

256. Early 20th-Century Chinese Literature. (2,4) One 3-hour seminar per week. This seminar focuses on the discourse about the self in early 20th-century Chinese literature, including first-person fiction, autobiography, critical writings on subjectivity and modernity. (SP)

257. Modern Chinese Literature. (2,4) Three hours of seminar per week. Prerequisites: Reading knowledge of modern Chinese. Graduate seminar in modern Chinese literature. Topics vary from year to year. (F,SP) Staff

260. Seminar in Chinese Linguistics. (2,4) Three hours of seminar per week. Prerequisites: 181 or 195. The topics vary according to the interests of the participants: dialectology, phonology, or grammar.

280. Modern Chinese Cultural Studies. (2,4) Course may be repeated for credit as topic varies. Three hours of seminar per week. Prerequisites: Reading knowledge of modern Chinese. Chinese literature and media culture courses. Course provides both historical coverage and a grounding in various theoretical problems and methodological approaches. Topics include print culture, cinema, popular music, and material culture; emphasis varies from year to year.

289. Directed Study for Graduate Students. (1-8) Hours to be arranged. Special tutorial or seminar on selected topics not covered by available courses or seminars. (F,SP)

299. Thesis Preparation and Related Research. (1-8) Hours to be arranged. Must be taken on a satisfactory/unsatisfactory basis. Prerequisites: Consent of thesis supervisor and graduate adviser. (F,SP)

601. Individual Study for Master’s Students. (1-8) Hours to be arranged. Must be taken on a satisfactory/unsatisfactory basis. Individual study for the comprehensive or language requirements in consultation with the graduate adviser. Units may not be used to meet either unit or residence requirements for a master’s degree. (F,SP)

602. Individual Study for Doctoral Students. (1-8) Hours to be arranged. Must be taken on a satisfactory/unsatisfactory basis. Individual study in consultation with the major field adviser, intended to provide an opportunity for qualified students to prepare for various examinations required of candidates for the Ph.D. (F,SP)

Japanese

Instructor approval is recommended for enrollment in language courses.

Courses numbered 170-189 are lecture courses given in English.

Lower Division Courses

1A-1B. Elementary Japanese. (5,5) Students will receive no credit for 1A-1B after taking 1. Five hours of lecture per week. Prerequisites: 1A is prerequisite to 1B. In this course, students will develop basic communication skills in Japanese and an understanding of Japanese culture and society. Students will learn vocabulary and grammar structures that will enable them to talk about themselves, their families and friends, the weather, and many other topics. Students will learn how to read and write in Japanese from the outset, learning approximately 150 kanji (Chinese characters) by the end of each semester.

1AL-1BL. Supplementary Work in Listening—Speaking. (1,1) One hour of lecture per week. Must be taken on a passed/not passed basis. Designed to supplement 1A-1B, respectively, in order to facilitate students’ listening proficiency. 1AL will cover a variety of listening exercises. 1BL will continue the training in 1AL, where students will apply these strategies in listening activities. (F,SP) Staff

1AS-1BS. Supplementary Work in Kanji. (1,1) One hour of lecture per week. Must be taken on a passed/not passed basis. Designed to supplement 1A-1B, respectively, in order to facilitate students’ listening proficiency. 1AS will cover a variety of listening exercises. 1BS will continue the training in 1AS, where students will apply these strategies in listening activities. (F,SP) Staff

7A. Introduction to Pre-Modern Japanese Literature and Culture. (4) Students will receive no credit for 7A after taking 182A. Students can remove a deficient grade in 182A by taking 7A. Three hours of lecture and one hour of discussion per week. This course provides an overview of Japanese literature and cultural history, from the seventh to the 18th century. 7A will begin with Japan’s early myth-histories, Kojiki, and its first extant poetry anthology, which show the first stages of transition from a preliterate, communal society to a highly developed courtly culture. Readings from noblemen’s diaries, poetry anthologies, and a selection from the classical Japanese literary masterpiece The Tale of Genji, offer a window into that courtly culture as its height of refinement. We will examine the intermingling traces of oral and high literary modes in popular tales from the Kamakura period and explore the early representations of samurai heroism in military chronicles and medieval Noh drama. After considering the development of linked verse in late medieval courtly society and several types of vernacular literature that emerged in the urban culture of the early modern Edo period, including the poetic diaries of the haiku poet Basho. This course does not assume or require any previous exposure to or coursework in Japanese literature, history, or language. (F,SP) Staff

7B. Introduction to Modern Japanese Literature and Culture. (4) Students will receive no credit for 7B after taking 182B. Students can remove a deficient grade in 182B by taking 7B. Three hours of lecture and one hour of discussion per week. An introduction to Japanese literature in translation in a two-semester sequence. 7B provides a survey of important works of 19th- and 20th-century Japanese fiction, poetry, and drama, and of other genres in the manner in which readers responded to the challenges of industrialization, internationalization, and war. Topics include the shifting notions of tradition and modernity, the impact of Westernization on the constructions of the self and gender, writers and the wartime state, literature of the atomic bomb, and postmodern fantasies and aesthetics. All readings are in English translation. Techniques of critical reading and writing will be introduced as an integral part of the course. (F,SP) Staff

10A-10B. Intermediate Japanese. (5,5) Students will receive no credit for 10A-10B after taking 10. Five hours of lecture per week. Prerequisites: 1B; 10A is prerequisite to 10B. Students will learn how to integrate the basic structures and vocabulary that they acquired in their first year so that they can communicate and comprehend reading materials. They will study new structures and vocabulary needed to enhance their speaking skills. While aural/oral skills are continuously emphasized, an increased amount of reading and writing will also be required. Each course will introduce approximately 150 new kanji.

10AG-10BG. Supplementary Work in Grammar—Intermediate. (1,1) One hour of lecture per week. Must be taken on a passed/not passed basis. These supplementary courses are designed for students who are concurrently enrolled in 10A and 10B to enable their acquisition of a better understanding of Japanese grammar in general and clause linkage in particular. (F,SP) Staff

10AS-10BS. Supplementary Work in Kanji—Intermediate. (1,1) One hour of lecture per week. Must be taken on a passed/not passed basis. Prerequisites: 10A is prerequisite to 10BS. These supplementary courses are designed for students who are concurrently enrolled in 10A and 10B to acquire a better understanding of kanji writing system and to improve overall kanji performance.

39. Freshman/Sophomore Seminar. Course may be repeated for credit as topic varies. Seminar format. Prerequisites: Priority given to freshmen and sophomores. Freshman and sophomore seminars offer lower division students the opportunity to work closely with a faculty member and a group of peers in a small-seminar setting. These seminars are offered in all campus departments; topics vary from department to department and from semester to semester.

50. Comparative Approaches to Japanese Literature and Culture. (4) Course may be repeated for credit as topic varies. Three hours of lecture per week. Comparative analysis of topics in premodern and modern Japanese literature and culture, varying with instructor. (F,SP) Staff

289. Directed Group Study for Lower Division Students. (1-4) Enrollment is restricted; see the Introduction to Courses and Curricula section of this catalog. Hours to be arranged. Must be taken on a passed/not passed basis. Prerequisites: Lower division standing, 3.5 GPA. Students will be enrolled in lower-division courses only; courses not covered by regularly scheduled courses. (F,SP)

99. Independent Study for Lower Division Students. (1-4) Enrollment is restricted; see the Introduction to Courses and Curricula section of this catalog. Hours to be arranged. Must be taken on a passed/not passed basis. Lower division standing, 3.5 GPA. Independent study in topics not covered by regularly scheduled courses.

Upper Division Courses

100A-100B. Advanced Japanese. (5,5) Students will receive no credit for 100A-100B after taking 100. Five hours of lecture per week. Prerequisites: 10B: 100A is prerequisite to 100B. This course aims to develop further discipline-specific skills in speaking, listening, reading, and writing. It concentrates on students to use acquired grammar and vocabulary with more confidence. Course materials include the textbook, supplementary readers, articles from newspapers and magazine articles and short stories to provide insight into Japanese culture and society.

100S. Japanese for Sinologists. (4) Staff

†Recipient of Distinguished Teaching Award

*Professor of the Graduate School

Japanese

Instructor approval is recommended for enrollment in language courses.

Courses numbered 170-189 are lecture courses given in English.

Lower Division Courses

1A-1B. Elementary Japanese. (5,5) Students will receive no credit for 1A-1B after taking 1. Five hours of lecture per week. Prerequisites: 1A is prerequisite to 1B. In this course, students will develop basic communication skills in Japanese and an understanding of Japanese culture and society. Students will learn vocabulary and grammar structures that will enable them to talk about themselves, their families and
This course provides further development of This course provides further development of This course is an introduction to This course examines the hi- Critical reading and trans- classical Japanese grammar. Thereafter students ap- eassential skills to enable students to express their points of view and construct argumentative discourse. Students read a variety of Japanese texts as sources for discussions to deepen their understanding of Japanese society and people. 103. Fourth-Year Readings: Japanese Literature. (4) Three hours of lecture per week. Prerequisites: 100B or consent of instructor. This course provides further development of reading, writing, speaking, and listening skills to enable students to express their points of view and construct argumentative discourse. Students read a variety of Japanese texts as sources for discussions to deepen their understanding of Japanese society and people. 111. Fifth-Year Japanese A. (4) Course may be repeated for credit. Three hours of lecture per week. Prerequisites: 102 or equivalent; basic knowledge of, and information retrieval skills related to, the Internet. This course is designed for students who have studied Japanese for at least four years (540 hours). It aims to develop further their reading, writing, speaking, and lis- tening skills so that they can utilize Japanese materials as research and job-related purposes, to present orally the results of their researches, and/or to pursue college-level courses taught in Japanese. Although much of class time will be devoted to reading- and writing-oriented activities, students are expected to participate actively in oral presentations, discussions, and debates in class. 112. Fifth-Year Japanese B. (4) Course may be repeated for credit. Three hours of lecture per week. Prerequisites: 102 or equivalent; basic knowledge of, and information retrieval skills related to, the Internet. This course is designed for students who have studied Japanese for at least four years (540 hours). It aims to develop further their reading, writing, speaking, and lis- tening skills so that they can utilize Japanese materials as research and job-related purposes, to present orally the results of their researches, and/or to pursue college-level courses taught in Japanese. Although much of class time will be devoted to reading- and writing-oriented activities, students are expected to participate actively in oral presentations, discussions, and debates in class. C115. Japanese Buddhism. (4) Three hours of lecture per week. A critical survey of the main themes in the history of Japanese Buddhism as they are treated in modern scholarly work. The course covers the trans- mission of Buddhism from China and Korea to Japan; the subsequent evolution in Japan of the Tendai, Shin- gong, Pure Land, Nichiren, and Zen schools; the organiz- ation and function of Buddhist institutions (monastic and lay) in Japanese society; the interaction between Buddhism and other modes of relig- ious belief in Japan; and the role of Buddhism in Japanese society. No previous linguistics training is required. (F,SP) Hasegawa 120. Introduction to Classical Japanese. (4) Three hours of lecture per week. Prerequisites: 108. An introduction to classical Japanese. The course will survey the language of the ninth to the 14th centuries. The course initially emphasizes the acquisition of the basics of classical Japanese grammar. Thereafter students ap- ply that grammar to the reading and translation of se- lect classical texts, followed by extensive discussion of literary, historical, and religious contexts and aspects of translation theory. 130. Classical Japanese Poetry. (4) Three hours of lecture per week. Prerequisites: 120. An introduction to the critical analysis and translation of traditional Japanese poetry, a genre that reaches from early declarative work redolent of an even earlier oral tra- dition to the sophisticated and often exquisitely differentiated emotional states via complex rhetoric and literary allusion. Topics may include the poetry of the Man'yoshu, Kokinshu, and Shinkokinshu poetic anthologies, insights into the lives and the haikai of Basho and other Early modern poets. 132. Pre-Modern Japanese Diary (Nikki) Literature. (4) Three hours of lecture per week. Prerequisites: 120. The tradition of Japanese self-reflective literature, composed by both men and women, is long and rich. Topics for this course include highly personal memoirs by court women and poetic travel diaries. 134. Japanese Drama. (4) Three hours of lecture per week. Prerequisites: 120. Formerly 128. Noh, Kyogen, joruri, and kabuki. 140. Haian Prose. (4) Three hours of lecture per week. Prerequisites: 120. The course focuses on se- lect masterpieces from the Japanese narrative tradition, including Murakami's The Tale of Genji and Sen Shonoaga's Pillow Book. 142. Japanese Medieval Prose. (4) Three hours of lecture per week. Prerequisites: 120. Formerly 126. Critical reading and translation of selections from me- dieval prose narrative texts, e.g., The Tale of the Heike. 144. Edo Literature. (4) Three hours of lecture per week. Prerequisites: 120. Critical reading and trans- lation of important literary texts from the Edo period, in- cluding poetic diaries, merchant fiction, and joruri drama. 146. Japanese Historical Documents. (4) Three hours of lecture per week. Prerequisites: 120. Writings in the Japanese vernacular constitute a limited part of the total pre-modern Japanese written corpus. Until the 20th century, the preferred medium for most historical texts and male diaries was Sino-Japanese (kanbun). Familiarity with the grammar of this ex- traordinarily rich tradition is therefore essential for all students of pre-modern Japanese disciplines. 155. Modern Japanese Literature. (4) Course may be repeated for credit as topic varies. Three hours of lecture per week. Prerequisites: 100B (may be taken concurrently). This course introduces students to modern Japanese literature. It concentrates on the uses of the historical past and ideology, and the transformation of the commonplace. We will consider historical, visual, anthropological, and literary approaches to the supernatural and raise cultural and philosophical questions crucial to an understanding of modern Japanese literature and culture. Topics include analysis of the text, for work in translation between Japanese and English contrastive, and practical linguistics which form the basis for work in translation between Japanese and English through experience. Topics include analysis of the text, rules of translating, faithfulness to the text. 170. Classical Japanese Literature in Translation. (4) Course may be repeated for credit as topic varies. Three hours of lecture per week. This course surveys Japanese poetry and/or prose written predominantly in or before the Helian Period (794-1185). Topics will vary. (F,SP) Staff 172. Tokyo: Biography of a City. (4) Three hours of lecture per week. In this course, we will explore the four hundred year history of Tokyo, one of the greatest cities to rise in Asia and the world. Using a variety of sources that include literature, music, art, and film, we will begin with the creation of Edo (Tokyo's former name) as the castle town of Japan's ruling military family and trace the centuries-long changes brought to the city by evolving samurai ethics, culture, commerce, industry, modernization, and globalization. (F,SP) Staff 173. Modern Japanese Literature in Translation. (4) Course may be repeated for credit as topic varies. Three hours of lecture per week. This course surveys modern Japanese fiction and poetry in the first half of the 20th century. Topics will vary. (F,SP) Staff C174. Japanese Buddhism in Diaspora. (4) Three hours of lecture per week. Prerequisites: One lower-di- vision course in Buddhist Studies or consent of in- structor. This course focuses on Japanese Buddhism during the late 19th and early 20th centuries in its en- counter with modernity, colonialism, and immigration history. Looking at the Japanese diaspora around the Pacific Rim, we will begin with Japanese Buddhism’s relationship with the Meiji state, State Shinto, Chris- tianity and the West. Regions covered include Manchuria, Korea, Hawaii, the U.S., Canada, and Brazil. Also listed as Group in Buddhist Studies C174. (F,SP) Williams 180. Ghosts and the Modern Literary Imagination. (3) Three hours of lecture per week. The course ex- amines how complex meanings are derived from modern Japanese literature and culture. Tracing the repre- sentations of the supernatural in drama, film, ethnog- raphy, and the visual arts, we explore how ghosts pro- vide the basis for remarkable flights of imaginative speculation and literary experimentation. Topics in- clude: storytelling and the loss of cultural identity, hor- ror and its conversion into aesthetic pleasure, fantasy, and the transformation of the supernatural in modern Japanese literature and culture. Tracing the repre- sentations of the supernatural in drama, film, ethnog- raphy, and the visual arts, we explore how ghosts pro- vide the basis for remarkable flights of imaginative speculation and literary experimentation. Topics in- clude: storytelling and the loss of cultural identity, hor- ror and its conversion into aesthetic pleasure, fantasy, and the transformation of the supernatural in modern Japanese literature and culture. 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Tracing the repre- sentations of the supernatural in drama, film, ethnog- raphy, and the visual arts, we explore how ghosts pro- vide the basis for remarkable flights of imaginative specula-
sider the (sometimes anomalous) place of important individual directors, with a special emphasis on 1960s New Wave cinema and experimental film. We also discuss the extent to which certain directorial techniques are also intertwined with broader cultural and social contexts of each. The course will therefore focus on an exploration of post-war Japanese film and culture, as they illuminate the construction and ruptures in notions of Japanese identity.

186. Japanese Drama in Translation. (4) Three hours of lecture per week. Lectures will cover the three major forms of Japanese drama: nō, bunraku (puppet theatre); and kabuki (classical Japanese). These courses involve a critical analysis of plays and their translations into English and Japanese language secondary articles. Dramatic texts will be analyzed as literature and, to some extent, as performance. In-class videos will be used to demonstrate performance practices.

187. Japanese Performance Forms. (4) Three hours of lecture and two hours of discussion per week. This course introduces Japanese performance forms through lecture and scholarly study as well as performance laboratories with experienced teachers and practitioners. The course gives an overview of each of these major forms, with focus on particular plays or works and their performance traditions; literary, cultural, and institutional backgrounds; and the central theoretical questions that arise with the study of each. (F,SP)

H195A-H195B. Honors Course. (2-5/2-5) Hours to be arranged. Credit and grade to be awarded on completion of sequence. Prerequisites: Senior honors standing in East Asian Languages, 3.5 GPA in major, 3.3 GPA in General Education, and written independent study and preparation of senior honors thesis. Limited to seniors of the Honors Program, see Index. (F,SP)

198. Directed Group Study. (1-4) Enrollment is restricted; see the Introduction to Courses and Curricula section of this catalog. Hours to be arranged. Must be taken on a passed/not passed basis. Prerequisites: Junior standing. Small group instruction in topics not covered by regularly scheduled courses. (F,SP)

199. Independent Study. (1-4) Enrollment is restricted; see the Introduction to Courses and Curricula section of this catalog. Hours to be arranged. Must be taken on a passed/not passed basis. Prerequisites: Junior standing. Independent study in topics not covered by regularly scheduled courses. (F,SP)

Graduate Courses

C225. Readings in Japanese Buddhist Texts. (2,4) Course may be repeated for credit. Three hours of seminar per week. This graduate seminar serves as an introduction to the study of Japanese Buddhist literature. Topics include (1) liturgical texts; (2) monastic rules for monks; and (3) histories of scriptural texts. Three hours of seminar per week. Prerequisites: Two semesters of classical Japanese. Topics include Vinaya (rules for monks) and early puppet theatre. Three hours of seminar per week. Prerequisites: Two semesters of classical Japanese. Topics include The Tale of Genji or other prose works in the classical corpus.

242. Seminar in Medieval Japanese Texts. (2,4) Course may be repeated for credit as topic varies. Three hours of seminar per week. Prerequisites: Two semesters of classical Japanese. Prerequisites: Two semesters of classical Japanese. This seminar examines several types of premodern Japanese drama along with narrative texts in order to explore the limits of significance of genre distinctions.

255. Seminar in Prewar Japanese Literature. (2,4) Course may be repeated for credit as topic varies. Three hours of seminar per week. Prerequisites: Graduate standing and consent of instructor. Reading and critical evaluation of selected texts in prewar (roughly the 1860s through the 1940s) Japanese literature and cultural criticism. Texts change with each offering of the course.

259. Seminar in Postwar Japanese Literature. (2,4) Course may be repeated for credit as topic varies. Three hours of seminar per week. Prerequisites: Graduate standing and consent of instructor. Reading and critical evaluation of selected texts in postwar (roughly the 1940s through the present) Japanese literature and cultural criticism. Texts change with each offering of the course.

269. Seminar in Japanese Linguistics. (2,4) Course may be repeated for credit as topic varies. Three hours of seminar per week. Prerequisites: 162 or consent of instructor. The topic varies according to the interests of the participants: dialectology, phonology, or syntax and semantics. Hasegawa

298. Directed Study for Graduate Students. (1-8) Hours to be arranged. Special tutorial or seminar on selected topics not covered by available courses or seminars. (F,SP)

299. Thesis Preparation and Related Research. (1-8) Hours to be arranged. Must be taken on a satisfactory/unsatisfactory basis. Prerequisites: Consent of thesis supervisor and graduate adviser. (F,SP)

601. Individual Study for Master’s Students. (1-8) Hours to be arranged. Must be taken on a satisfactory/unsatisfactory basis. Prerequisites: Consent of graduate adviser. This is a second-year course in consultation with the graduate adviser. Students will receive no credit for 10AX-10BX after taking 1AX or 1BX. Three hours of lecture per week. A survey of modern Korean literature and culture in the 20th century, focusing on the development of nationalist aesthetics in both North and South Korea. The topics include: “new works” in modern Korean culture, colonial modernity, war and trauma, and diaspora. Texts to be examined include works of fiction, poetry, art, and film. All readings are in English. (SP)

Graduate Courses

C225. Readings in Japanese Buddhist Texts. (2,4) Course may be repeated for credit. Three hours of seminar per week. This graduate seminar serves as an introduction to the study of Japanese Buddhist literature. Topics include (1) liturgical texts; (2) monastic rules for monks; and (3) histories of scriptural texts. Three hours of seminar per week. Prerequisites: Two semesters of classical Japanese. Topics include Vinaya (rules for monks) and early puppet theatre. Three hours of seminar per week. Prerequisites: Two semesters of classical Japanese. This seminar examines several types of premodern Japanese drama along with narrative texts in order to explore the limits of significance of genre distinctions.

255. Seminar in Prewar Japanese Literature. (2,4) Course may be repeated for credit as topic varies. Three hours of seminar per week. Prerequisites: Graduate standing and consent of instructor. Reading and critical evaluation of selected texts in prewar (roughly the 1860s through the 1940s) Japanese literature and cultural criticism. Texts change with each offering of the course.

259. Seminar in Postwar Japanese Literature. (2,4) Course may be repeated for credit as topic varies. Three hours of seminar per week. Prerequisites: Graduate standing and consent of instructor. Reading and critical evaluation of selected texts in postwar (roughly the 1940s through the present) Japanese literature and cultural criticism. Texts change with each offering of the course.

269. Seminar in Japanese Linguistics. (2,4) Course may be repeated for credit as topic varies. Three hours of seminar per week. Prerequisites: 162 or consent of instructor. The topic varies according to the interests of the participants: dialectology, phonology, or syntax and semantics. Hasegawa

298. Directed Study for Graduate Students. (1-8) Hours to be arranged. Special tutorial or seminar on selected topics not covered by available courses or seminars. (F,SP)

299. Thesis Preparation and Related Research. (1-8) Hours to be arranged. Must be taken on a satisfactory/unsatisfactory basis. Prerequisites: Consent of thesis supervisor and graduate adviser. (F,SP)

601. Individual Study for Master’s Students. (1-8) Hours to be arranged. Must be taken on a satisfactory/unsatisfactory basis. Prerequisites: Consent of graduate adviser. This is a second-year course in consultation with the graduate adviser. Students will receive no credit for 10AX-10BX after taking 1AX or 1BX. Three hours of lecture per week. A survey of modern Korean literature and culture in the 20th century, focusing on the development of nationalist aesthetics in both North and South Korea. The topics include: “new works” in modern Korean culture, colonial modernity, war and trauma, and diaspora. Texts to be examined include works of fiction, poetry, art, and film. All readings are in English. (SP)

Korean

Instructor approval is required for enrollment in language courses.

Courses numbered 180-189 are lecture courses given in English.

Lower Division Courses

1A-1B. Elementary Korean. (5-8) Five hours of lecture per week. Prerequisites: 1A is prerequisite to 1B; or consent of instructor. These courses are designed for students who have little or no prior knowledge of the Korean language. With emphasis on speaking, listening, writing, and reading skills, the course will introduce the basic grammar of the Korean language. The course aims to introduce to certain cultural aspects through media sources and various activities.

1AX-1BX. Elementary Korean for Heritage Speakers. (5) Students will receive no credit for 1AX-1BX after taking 1A-1B. Five hours of lecture per week. Prerequisites: 1AX is prerequisite to 1BX; or consent of instructor. These courses are designed for students who already have elementary comprehension and speaking skills in Korean and have minimum exposure to reading and/or writing in Korean. (F,SP)

7A. Introduction to Pre-Modern Korean Literature and Culture. (4) Students will receive no credit for 7A after taking 10AX. Three hours of lecture per week. A survey of pre-modern Korean literature and culture from the seventh century to the 19th century, focusing on the relation between literary texts and various aspects of performance tradition. Topics include literati culture, gender relations, humor, and material culture. Texts to be examined include ritual songs, sajo, kasa, p’ansori, prose narratives, art, and contemporary media representation of performance traditions. All readings are in English. (F,SP)

7B. Introduction to Modern Korean Literature and Culture. (4) Students will receive no credit for 7B after taking 10B. Three hours of lecture per week. A survey of modern Korean literature and culture in the 20th century, focusing on the development of nationalist aesthetics in both North and South Korea. The topics include: “new works” in modern Korean culture, colonial modernity, war and trauma, and diaspora. Texts to be examined include works of fiction, poetry, art, and film. All readings are in English. (SP)

10A-10B. Intermediate Korean. (5) Five hours of lecture per week. Prerequisites: 1B is prerequisite to 10A; or consent of instructor. This is a second-year course in modern Korean with greater attention given to listening, speaking, reading, written, and cultural aspects of the language. Kö

10AX-10BX. Intermediate Korean for Heritage Speakers. (5) Students will receive no credit for 10AX-10BX after taking 1AX or 1BX. Five hours of lecture per week. Prerequisites: 10AX is prerequisite to 10BX. Intermediate Korean for students whose Korean proficiency level is higher in speaking than in reading or writing due to Korean-heritage background. (F,SP)

39. Freshman/Sophomore Seminar. Course may be repeated for credit as topic varies. Seminar format. Prerequisites: Priority given to freshmen and sophomores. This is an introductory course designed for lower division students the opportunity to explore an intellectual topic with a faculty member and a group of peers in a small-seminar setting. These seminars are offered in all campus departments; topics vary from department to department and from semester to semester.

98. Directed Group Study for Lower Division Students. (1-4) Enrollment is restricted; see the Introduction to Courses and Curricula section of this catalog. Hours to be arranged. Must be taken on a passed/not passed basis. Prerequisites: Lower division standing, 3.5 GPA. Small group instruction in topics not covered by regularly scheduled courses. (F,SP)

99. Independent Study for Lower Division Students. (1-4) Enrollment is restricted; see the Introduction to Courses and Curricula section of this catalog. Hours to be arranged. Must be taken on a passed/not passed basis. Prerequisites: Lower division standing, 3.5 GPA. Small group instruction in topics not covered by regularly scheduled courses. (F,SP)

Upper Division Courses

100A-100B. Advanced Korean. (4) Three hours of lecture per week. Prerequisites: 10A, 100A is prerequisite to 10B. Three semesters of classical Japanese. These courses are designed for students who already have elementary comprehension and speaking skills in Japanese and have minimum exposure to reading and/or writing in Japanese. (F,SP)

Recipient of Distinguished Teaching Award

*Professor of the Graduate School
will be introduced in each semester. Students will gain exposure and knowledge of advanced-level Korean by reading authentic texts and writing short compositions, summaries of essays, and critical reviews. Small group discussions will enhance speaking skills.

100AX-100BX. Advanced Korean for Heritage Speakers. (4-4) Three hours of lecture per week. Prerequisites: 100X. An advanced course in the reading and analysis of specialized texts in modern Korean drawn from history, sociology, economics, etc. Advanced conversation, writing skills, and practice in the use of standard reference tools will also be emphasized, with the goal of preparing students to do independent research in Korean.

102. Fourth-Year Readings—Literature. (Course may be repeated for credit. Three hours of lecture per week. Prerequisites: 100B or equivalent. This course is designed to increase the students’ proficiency to advanced-high level in all aspects of modern Korean; it aims to prepare students for research or employment in a variety of Korean-related fields. Text materials are drawn from authentic sources including modern Korean literature, film, intellectual history, and readings on contemporary issues. Radio and TV broadcasts will also be included in the teaching materials. Texts will be selected, in part, according to student interests. With the instructor’s guidance, students will conduct research projects based on own interests. Students will write papers in their own or in written form at the end of the semester. (F,SP) Staff

111. Fifth-Year Korean A. (Course may be repeated for credit. Three hours of lecture per week. Prerequisites: 102. This course is designed to increase the students’ proficiency to advanced-high level in all aspects of modern Korean; it aims to prepare students for research or employment in a variety of Korean-related fields. Text materials are drawn from authentic sources including modern Korean literature, film, intellectual history, and readings on contemporary issues. Radio and TV broadcasts will also be included in the teaching materials. Texts will be selected, in part, according to student interests. With the instructor’s guidance, students will conduct research projects based on own interests. Students will write papers in their own or in written form at the end of the semester. (F,SP) Staff

112. Fifth-Year Korean B. (Course may be repeated for credit. Three hours of lecture per week. Prerequisites: 102. This course is designed to increase the students’ proficiency to advanced-high level in all aspects of modern Korean; it aims to prepare students for research or employment in a variety of Korean-related fields. Text materials are drawn from authentic sources including modern Korean literature, film, intellectual history, and readings on contemporary issues. Radio and TV broadcasts will also be included in the teaching materials. Texts will be selected, in part, according to student interests. With the instructor’s guidance, students will conduct research projects based on own interests. Students will write papers in their own or in written form at the end of the semester. (F,SP) Staff

120. Genre and Occasion in Traditional Poetry. (Course may be repeated for credit. Three hours of lecture per week. Prerequisites: 100B or equivalent. This course will examine traditional hyangga, sijo, kasa, han and changhyang and consider the performative and cultural contexts of compositional practice before the 20th century. The course is intended to introduce key verse forms as well as basic reading knowledge of premodern Korean texts. Topics will vary. (F,SP) Shin

140. Narrating Persons and Objects in Traditional Korean Prose. (Course may be repeated for credit. Three hours of lecture per week. This course is a critical exploration of the broad range of prose literature before the 20th century, including various fictional, memoirs, travel accounts, and essays. Particular attention will be given to narrative styles, issues of personal identity, and a link between literary text and modern development in contemporary Korean literature before the 20th century. The course is intended as a close reading of key prose narrative works, while functioning simultaneously as an introduction to basic reading knowledge of premodern Korean texts. Topics will vary. (F,SP) Shin

150. Modern Korean Poetry. (Course may be repeated for credit as topic varies. Three hours of lecture per week. Prerequisites: 100B or equivalent. This course surveys modern Korean poetry from the first half of the 20th century and the consideration of modern poetry. Particular attention will be given to the identity of modernism, modernity, and the identity of modernity with the colonial occupation of Korea. (F,SP) Shin

155. Modern Korean Fiction. (Course may be repeated for credit as topic varies. Three hours of lecture per week. Prerequisites: 100B or equivalent. This course surveys modern Korean fiction in the first half of the 20th century. It considers the development works of the novel, short fiction, and literary criticism. The course examines the development of modern fiction in the context of nationalist movements, colonialism, and the Korean War. (F,SP) Shin

157. Contemporary Korean Literature. (Course may be repeated for credit as topic varies. Three hours of lecture per week. Prerequisites: 100B or equivalent. This course surveys contemporary Korean literature, focusing on the separate development of language, literary aesthetics, and nationalism in North and South Korea from the late 19th century to the present. The course examines an assortment of works of fiction, poetry, literary criticism, and visual media. Emphasis is on close readings of the texts, while considering various issues: colonial cultural production; war and trauma, gender and labor, political violence and presentation, modernization and dislocation, and diaspora. Topics will vary. (F,SP) Shin

163. Translation: Theory and Practice. (Course may be repeated for credit. Three hours of lecture per week. Prerequisites: 100B or equivalent. This course will introduce students to the foundations of translation. The course will introduce the different to the idea of “Korea” primarily via images produced in and outside Korea, the course aims to consider the idea of “Korea” primarily via images constructed through transnational cultural networks. Consideration will be given to the relationship between visual media and cultural memory. We will think in particular about the way in which popular visual media such as photography and film narrate the key local sites of contested memories of colonization, war, and political violence. (F,SP) Shin

185. Picturing Korea. (Course may be repeated for credit. Three hours of lecture per week. This course explores the role of modern visual media in shaping geopolitical, cultural, and historical imaginations of Korea during the last hundred years. Drawing examples from photographs, films, and literature, produced in and outside Korea, the course aims to consider the idea of “Korea” primarily via images constructed through transnational cultural networks. Consideration will be given to the relationship between visual media and cultural memory. We will think in particular about the way in which popular visual media such as photography and film narrate the key local sites of contested memories of colonization, war, and political violence. (F,SP) Shin

H91SA-H91SB. Honors Course. (F,SP) Hours to be arranged. Credit and grade to be given on a pass/fail basis. (Senior honors standing in East Asian Languages, 3.5 GPA in major, 3.3 overall. Directed independent study and preparation of senior honors thesis. Limited to senior honors candidates in East Asian Languages. (For description of Honors Program, see Index). (F,SP) Staff

198. Directed Group Study. (1-4) Enrollment is restricted; see the Introduction to Courses and Curricula section of this catalog. Hours to be arranged. Must be taken on a pass/not passed basis. Prerequisites: Junior standing. Small group instruction in topics not covered by regularly scheduled courses. (F,SP)

207A. Major Issues in Korean Literature and Culture. (Course may be repeated for credit. Three hours of seminar per week. Prerequisites: Graduate standing and consent of instructor. This seminar provides in-depth discussions on a topic germane to Korean and other East Asian literary and cultural studies. Students in the Group in Asian Studies with research interests in Korean literature, intellectual history, and popular culture are particularly recommended to take this course. Students in Chinese and Japanese may take this course for the purpose of comparative examination with the student’s main area of research. The course is open to graduate students in all fields, but students should consult with the instructor to determine the viability of this course for the student’s overall program of studies. Topics will vary. (F,SP)

207B. Major Issues in Korean Literature and Culture. (Course may be repeated for credit. Three hours of seminar per week. Prerequisites: Graduate standing and consent of instructor. This course surveys the major scholarship on premodern Korean literature, focusing on the separate development of language, literary aesthetics, and nationalism in North and South Korea from the late 19th century to the present. The course examines an assortment of works of fiction, poetry, literary criticism, and visual media. Emphasis is on close readings of the texts, while considering various issues: colonial cultural production; war and trauma, gender and labor, political violence and presentation, modernization and dislocation, and diaspora. Topics will vary. (F,SP) Shin

298. Directed Study for Graduate Students. (1-8) Hours to be arranged. Special tutorial or seminar on selected topics not covered by available courses or seminars. (F,SP)

299. Thesis Preparation and Related Research. (1-8) Hours to be arranged. Credit and grade to be given on a satisfactory/unsatisfactory basis. Prerequisites: Consent of thesis supervisor and graduate adviser. (F,SP) Staff

601. Individual Study for Master’s Students. (1-8) Must be taken on a satisfactory/unsatisfactory basis. Prerequisites: Consent of graduate adviser. Individual study in areas outside those listed in the Graduate Group in Asian Studies in consultation with the graduate adviser. Units may not be used to meet either unit or residence requirements for a master’s degree. (F,SP) Staff
199. Directed Group Study. (1-4) Enrollment is restricted; see the Introduction to Courses and Curricula section of this catalog. Hours to be arranged. Must be taken on a pass/no pass basis. Prerequisites: Junior standing. Small group instruction in topics not covered by regularly scheduled courses. (F,SP)

Graduate Courses

C224. Readings in Tibetan Buddhist Texts. (2,4) Three hours of seminar per week. This graduate seminar provides an introduction to a broad range of Tibetan Buddhist texts as well as to the methods and resources for their study. Readings for the course will be drawn from a variety of genres and historical periods, including (1) chronicles and histories, (2) biographical literature, (3) doctrinal treatises, (4) canonical texts, (5) liturgical texts, (6) ritual manuals, and (7) devotional and liturgical texts. The seminar is designed to be of interest to graduate students interested in premodern Tibetan from any perspective (literature, religion, art, history, philosophy, law, etc.). Students are required to do all of the readings in the original classical Tibetan. The course will also introduce students to "tools and methods" for the study of Tibetan Buddhist literature, including standard lexical and bibliographic references, digital resources, and secondary literature in modern languages. The content of the course will vary from semester to semester to account for the needs and interests of participants. Offered as Group in Buddhist Studies C224. (F,SP)

298. Directed Study for Graduate Students. (1-8) Hours to be arranged. Special tutorial or seminar on selected topics not covered by available courses or seminars. (F,SP)

299. Thesis Preparation and Related Research. (1-8) Hours to be arranged. Must be taken on a satisfactory/unsatisfactory basis. Prerequisites: Consent of thesis supervisor and graduate adviser. (F,SP)

601. Individual Study for Master’s Students. (1-8) Must be taken on a satisfactory/unsatisfactory basis. Prerequisites: Consent of graduate adviser. Individual study for the comprehensive or language requirements in consultation with the graduate adviser. Units may not be used to meet either unit or residence requirements for a master’s degree. (F,SP)

602. Individual Study for Doctoral Students. (1-8) Hours to be arranged. Must be taken on a satisfactory/unsatisfactory basis. Prerequisites: Consent of major field adviser, intended to provide an opportunity for qualified students to prepare for various examinations required of candidates for the Ph.D. (F,SP)

Economics

(College of Letters and Science)

Department Office: 549 Evans Hall, (510) 642-0822

Chair: Benjamin Hermelin, Ph.D.

Professors

George A. Akerlof (The Daniel E. Koshland Sr. Distinguished Professor of Economics; Nobel Laureate, 2001), Ph.D. Massachusetts Institute of Technology. Macroeconomics, monetary theory, industrial organization, comparative methodology.
Robert M. Anderson (Professor of Mathematics and Economics), Ph.D. Yale University. Mathematical economics.
Alan Auerbach (The Robert D. Burch Professor of Economics), Ph.D. University of California, Berkeley. Public finance, macroeconomics.
Phanish S. Pande (Professor of Economics), Ph.D. Cambridge University. Development, international economics.
R. Claire Brown (Chair, Center for Work, Technology and Society of the Massachusetts Institute of Technology), Ph.D. University of Maryland. Labor economics.
David Card (The Class of 1950 Professor of Economics), Ph.D. Princeton University. Labor economics.
Roper Daniel (Interim Dean of the College of Arts and Sciences). Macroeconomics, finance.
Suzanne Scotchmer (Professor of Economics and Mathematics), Ph.D. Stanford University. Economics, statistical modeling.
Barry Eichengreen (The George C. Paardee and Helen N. Paardee Professor of Economics and Political Science), Ph.D. Yale University. International economics.
John M. Quigley (The I. Donald Terner Distinguished Professor of Public Policy), Ph.D. Harvard University. Public finance, public policy, urban economics.
Matthew Rabin (The Edward G. and Nancy S. Jordan Professor of Economics), Ph.D. Harvard University. Public policy, applied microeconomics.
Daniel Ruston (Director, Center on Economics and Demography of Aging), Ph.D. Harvard University. Demography, economic history.
John Morgan, Ph.D. Pennsylvania State University. Theory, methodology.
Maurice Obstfeld (The Class of 1958 Chair), Ph.D. Massachusetts Institute of Technology. International economics, macroeconomics, monetary economics.

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Introduction to microeconomics courses and 3.3 GPA overall. The senior thesis may be an extension of a seminar paper prepared under the continued guidance of a faculty member through enrollment in H195A/B.

**Graduate Program**

The graduate program trains doctoral students interested in pursuing advanced study and conducting original research in economics. Detailed information concerning admission, financial aid, and degree requirements may be found on the Department of Economics web site at egrab.berkeley.edu/econ/grad/grad.shtml.

New admissions to the graduate program are restricted to students pursuing the Ph.D. degree. There is no external credit program for the M.A. degree; only students enrolled at Boalt School of Law or in other doctoral programs at Berkeley may enroll for an M.A. degree in economics if approval is given by both departments.

A strong mathematics background is a must. Other requirements for the internal M.A. degree are as follows: (1) coursework in economic theory equivalent to Economics 101A-101B, 200A-200B, or 201A, 201A; (2) completion of 24 units of approved coursework, of which 12 units must be in graduate economics courses numbered 201 or greater; and (3) satisfactory performance in two written field examinations. Interested students should see the graduate adviser for further details and applications.

**Law and Economics**

The School of Law and the Department of Economics sponsor a concurrent program which permits students to study for the degree of Juris Doctor while preparing for the Ph.D. in Economics. In four years, a well-prepared student can receive the law degree and also complete the prethesis requirements for the economics degree. Full information concerning admission, financial aid, the study of economic growth, unemployment, and inflation. Special emphasis is placed on the application of economic tools to contemporary economic problems and policies. Economics 2 differs from Economics 1 in that it has an additional hour of lecture per week and can thus cover topics in greater depth. It is particularly appropriate for intended economics majors.

**Major Requirements**

Economics 100A and 100B, or 101A and 101B, Economics (either Economics 100A or 101A) and two upper division economics courses. All courses must be taken on a letter-graded basis (please see handbook).

**Departmental Honors**

Students interested in graduating with honors in economics should consult with a faculty adviser no later than their first semester of the senior year. The department recommends a student for graduation with honors based on (a) evidence of superior performance provided by a thesis written in the senior year, and (b) the student’s course grade record overall and in the major. The minimum major GPA requirement is 3.5 in upper division economics courses and 3.3 GPA overall. The senior thesis may be an extension of a seminar paper prepared under the continued guidance of a faculty member through enrollment in H195A/B.

**Graduate Program**

The graduate program trains doctoral students interested in pursuing advanced study and conducting original research in economics. Detailed information concerning admission, financial aid, and degree requirements may be found on the Department of Economics web site at egrab.berkeley.edu/econ/grad/grad.shtml.

New admissions to the graduate program are restricted to students pursuing the Ph.D. degree. There is no external credit program for the M.A. degree; only students enrolled at Boalt School of Law or in other doctoral programs at Berkeley may enroll for an M.A. degree in economics if approval is given by both departments.

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A strong mathematics background is a must. Other requirements for the internal M.A. degree are as follows: (1) coursework in economic theory equivalent to Economics 101A-101B, 200A-200B, or 201A, 201A; (2) completion of 24 units of approved coursework, of which 12 units must be in graduate economics courses numbered 201 or greater; and (3) satisfactory performance in two written field examinations. Interested students should see the graduate adviser for further details and applications.
C103. Introduction to Mathematical Economics. (3) Three hours of lecture per week. Prerequisites: Math S3 and P44. Formerly 103. Selected topics illustrating the application of mathematics to economic theory. This course is intended for upper-division students in Mathematics, Statistics, the Physical Sciences, and Engineering, and for economics majors with adequate mathematics background. No economic background is required. Also listed as Mathematics C103. Staff.

104. Advanced Microeconomic Theory. (4) Three hours of lecture and one hour of discussion per week. Prerequisites: 101A or consent of instructor. This course explores some issues in advanced microeconomic theory with a focus on game-theoretic models and the theory of choice under uncertainty. Specific applications will vary from year to year, and will generally include topics from information economics and models of strategic interaction. Staff.

105. History of Economic Thought. (3) Three hours of lecture per week. Prerequisites: 100A-100B or 101A-101B. A survey of the theories of major economists from Adam Smith to Keynes. Staff.

C110. Game Theory in the Social Sciences. (4) Students will receive no credit for C110 after taking Economics 104. Three hours of lecture and one hour of discussion per week. Formerly 135. A non-technical introduction to game theory. Basic principle, and models of interaction among players, with a strong emphasis on applications to political science, economics, and other social sciences. Also listed as Political Science C110. Staff.

113. American Economic History. (4) Three hours of lecture and one hour of discussion per week. Prerequisites: 1 or 2. A survey of trends in the American economy; emphasis on factors explaining economic growth and on the changing distribution of the gains and losses associated with growth. (F,SP) Staff.

115. The World Economy in the 20th Century. (4) Three hours of lecture and one hour of discussion per week. Prerequisites: 1 or 2. Development of the world economic system with particular reference to worldwide trading relationships. This course is equivalent to History 150; students will not receive credit for both courses. Staff.

119. Psychology and Economics. (4) Three hours of lecture and one hour of discussion per week. Prerequisites: 100A or 101A. This course presents psychological and experimental economics research demonstrating departures from perfect rationality, self-interest, and other classical assumptions of economics and explores ways that these departures can be mathematically modeled and incorporated into mainstream positive and normative economic theories. The course focuses on the behavioral evidence itself, especially on specific formal assumptions that capture the findings in a way that can be incorporated into economics. The implications of these new assumptions for theoretical and empirical economics will be explored. (F,SP) Staff.

121. Industrial Organization and Public Policy. (4) Three hours of lecture and one hour of discussion per week. Prerequisites: 100A or 101A. The organization and structure of production in the U.S. economy; determination of market structure, business behavior, and economic performance. Implications for antitrust policy. Staff.

122. Industrial Organization Seminar. (4) Three hours of seminar per week. Prerequisites: 121 and/or consent of instructor. Seminar on problems in the field of industrial organization. Seminar paper is required. Staff.

123. Government Regulation of Industry. (3) Three hours of lecture per week. Prerequisites: 121. Problems of public policy in the field of industrial organization. Analysis of regulatory consequences with particular attention to economic performance. Staff.

124. Special Topics in Industrial Organization. (3) Three hours of lecture per week. Analysis of market structure, conduct and performance in selected industries. See course announcement for current topics. Staff.


126. Industrial Organization: Theory and Evidence. (3) Three hours of lecture per week. Prerequisites: 121, 101A-101B, and consent of instructor. This course focuses on the role of the government in the economy from a theoretical and empirical perspective. The aim of the course is to provide an understanding of the reasons for government intervention in the economy, analyzing the magnitude and direction of government actions and the responses of economic agents to the government’s actions. The course covers the analysis of tax policy, social insurance programs, public goods, environmental protection, and the determinants of different levels of government. Special emphasis is set on current government policy issues such as social security reform, income tax reform, and budget deficits. (F,SP) Staff.

132. Seminar in Public Sector Economics. (4) Three hours of seminar per week. Prerequisites: 131 and/or consent of instructor. Enrollmen will be limited. A seminar paper is required. Staff.

136. Financial Economics. (4) Three hours of lecture and one hour of discussion per week. Prerequisites: 100A or 101A, and one semester of statistics. Analysis of financial assets and institutions. The course emphasizes modern asset valuation theory and the role of financial intermediaries, and their regulation, in the financial system. (F,SP) Staff.

137. Aggregate Economics Seminar. (4) Three hours of seminar per week. Prerequisites: 136 and consent of instructor; enrollment will be limited. A seminar paper is required. (SP) Staff.

140. Economic Statistics and Econometrics. (4) Students will not receive credit for 140 after taking 141. Three hours of lecture and one and one-half hours of discussion per week. Prerequisites: 100A-100B or 101A-101B, Math 20A, 25A, 31A, or equivalent. Introduction to problems of observation, estimation, and hypothesis testing in economics. This course covers the linear regression model and its application to empirical problems in economics. (F,SP) Staff.

141. Econometric Analysis. (4) Students will not receive credit for 141 after taking 140. Three hours of lecture and one and one-half hours of discussion per week. Prerequisites: 100A-100B or 101A-101B or equivalent. (F,SP) Staff.

142. Applied Econometrics and Public Policy. (4) Three hours of lecture and one hour of discussion per week. Prerequisites: 101A or consent of instructor. On the possible application of econometric methods to empirical problems in economics and public policy analysis. It provides background on issues that arise when analyzing nonmarket and market data and provides a guide for tools that are useful for empirical research. By the end of the course, students will have an understanding of the types of research designs that can lead to convincing analysis and be comfortable working with large scale data sets. Also listed as Public Policy C142 and Political Science C131A. Staff.

151. Labor Economics. (3) Three hours of lecture per week. Prerequisites: 100A-100B or 101A-101B or consent of instructor. The role of the econometric forces that shape labor markets, institutions, and performance in the U.S., Japan, and at least one European country (usually Germany). Institutions examined include trade unions, legal regulations, and social conventions. (F,SP) Staff.

152. Wage Theory and Policy. (4) Three hours of lecture and one hour of discussion per week. Prerequisites: 100A-100B or 101A-101B. This course focuses on theoretical and empirical analysis of wage and employment outcomes in the role of public policy in affecting wage and employment outcomes in the U.S. labor market is examined. Topics include labor supply, labor demand, minimum wages, the economics of education and training, discrimination and the impact of antidisrimination programs, changes in wage inequality over time, immigration, unions, unemployment, and poverty. (F,SP) Staff.

153. Labor Economics Seminar. (4) Three hours of seminar per week. Prerequisites: 151 or 152 and consent of instructor. Topics in labor economics. Seminar paper required. Staff.

154. Economics of Discrimination. (3) Three hours of seminar per week. Prerequisites: 100A-100B or 101A-101B or equivalents; 140 or 141. Starting from Becker’s classic book on the economics of discrimination, this course will consider the role of public policy in affecting wage and employment outcomes in the U.S. labor market is examined. Topics include labor supply, labor demand, minimum wages, the economics of education and training, discrimination and the impact of antidiscrimination programs, changes in wage inequality over time, immigration, unions, unemployment, and poverty. (F,SP) Staff.

157. Health Economics. (3) Three hours of lecture per week. Prerequisites: 1 or 2. An economic analysis of policies and institutions in the U.S. health care sector. Topics covered include the supply and demand for health services, conceptual and policy issues relating to the provision of health insurance, and economic analysis of efficient regulatory policies toward the health care sector. (F,SP) Staff.

161. Economics of Transition: Eastern Europe. (3) Three hours of lecture per week. Prerequisites: 1 or 2; Economic behavior under socialism; socialism vs. capitalism. Transition challenges. Stylized facts of transition. Political economy of reform strategies. Liberalization and the management. Privateization policies and enterprise restructuring. Legal reform, institutional change, and variation in economic performance across countries. Foreign trade and economic integration of the European Union and transition countries. The Washington consensus, transition, and the institutions of capitalism. (F,SP) Staff.

162. The Chinese Economy. (3) Three hours of lecture per week. Prerequisites: 100A-101B or 101A-101B. The Chinese economy, its institutions, reform movements, and transition to the market, and development. (F,SP) Staff.

163. Special Topics in Economic Systems. (1.5) One and one-half hours of lecture per week. Prerequisites: 1 or 2. Recommended: 161 or 162. As announced in the department course descriptions. Staff.

C171. Economic Development. (4) Three hours of lecture and one hour of discussion per week. Prerequisites: 100A or 101A. Economic development and policy issues related to the provision of health insurance, and economic analysis of efficient regulatory policies toward the health care sector. (F,SP) Staff.

172. Case Studies in Economic Development. (4) Three hours of lecture per week. Prerequisites: 140 or 141 or consent of instructor. Staff.
173. Economic Development Seminar. (4) Three hours of seminar per week. Prerequisites: 171 or 172 and consent of instructor. A seminar paper will be required. Staff

C175. Economic Demography. (3) Three hours of lecture per week. Prerequisites: 1 or 2. Formerly 175. A general introduction to economic demography, addressing the following kinds of questions: What are the economic consequences of immigration to the U.S.? Will industrialization afford the health and pension costs of the aging populations? How has the size of the baby boom affected its economic well-being? Why has fertility been high in Third World countries? In which countries is marriage postponed, divorce high, fertility so low, and extramarital fertility rising? What are the economic and environmental consequences of rapid population growth? Also listed as Demography C175. Staff

181. International Trade. (4) Three hours of lecture and one hour of discussion per week. Prerequisites: 100A-100B or 101A-101B. The theory of international trade and its applications to tariff protection. (F,SP) Staff

182. International Monetary Economics. (4) Three hours of lecture and one hour of discussion per week. Prerequisites: 100A-100B or 101A-101B. The balance of payments, the determination of the trade balance and income under fixed and floating exchange rates, money and prices in open economies, the internationalization of financial markets and its implications, international macroeconomic interdependence, capital flows, and the determination of the exchange rate. (F,SP) Staff

183. International Economic Seminar. (4) Three hours of seminar per week. Prerequisites: 181 and 182 and consent of instructor. A seminar paper is required. Staff

190. Seminar on Topics in Economics. (4) Course may be repeated for credit. Three hours of seminar per week. Prerequisites: consent of instructor. A seminar focusing on current research in the field of the instructor. The topic and prerequisites will be announced before registration. Enrollment will be limited. A seminar paper is required. Staff

195A. Senior Honors Thesis. (1-3) Hours to be arranged. Must be taken on a passed/not passed basis. Prerequisites: Senior honors candidates only (students with major GPA of 3.50 or better or permission of instructor). Preparation for writing a thesis, finding and organizing a topic, gathering data and getting started. H195A is not prerequisite to H195B. (F,SP) Staff

195B. Senior Honors Thesis. (1-3) Hours to be arranged. Prerequisites: Senior honors candidates only (students with major GPA of 3.50 or better or permission of undergraduate advisor). Writing a thesis under the supervision of a faculty member. Applications and details through the departmental undergraduate office. H195A is not prerequisite to H195B. (F,SP) Staff

197. Field Studies. (1-4) Course may be repeated for credit. Hours to be arranged. Must be taken on a passed/not passed basis. Prerequisites: Upper-division standing. Written proposal must be approved by Department Chair. Supervised field studies in economics. Projects may be initiated by the students. (F,SP) Staff

198. Directed Group Study. (1-4) Course may be repeated for credit. Enrollment is restricted; see the Introduction to Courses and Curricula section of this catalog. Hours to be arranged. Must be taken on a passed/not passed basis. Prerequisites: Upper-division standing. Written proposal must be approved by Department Chair. Enrollment is restricted. (F,SP) Staff

Graduate Courses

201A. Economic Theory. (4) Three hours of lecture and two hours of discussion per week. Prerequisites: 101A-101B, 204, Mathematics 53 and 54; or equivalent. Basic preparation for the Ph.D. program including theory of the firm and the consumer, game theory. (F,SP) Staff

201B. Economic Theory. (4) Three hours of lecture and two hours of discussion per week. Prerequisites: 101A-101B, 204, Mathematics 53 and 54; or equivalent. Basic preparation for the Ph.D. program including agency theory and mechanism design, general equilibrium theory. (F,SP) Staff

202A-202B. Macroeconomic Theory. (4-4) Three hours of lecture and two hours of discussion per week. Prerequisites: 100A-100B or 101A-101B or equivalent. Mathematics 53 and 54 or equivalent and consent of instructor. The course provides a rigorous abstract treatment of the elements of real analysis and linear algebra central to current research in economics. The course develops in the students the ability to read mathematical proofs and to compose simple proofs on their own. (F,SP) Staff

203. Advanced Topics in Economic Theory. (3) Two hours of lecture per week. Prerequisites: Consent of instructor; See department course description each semester. Staff

204. Mathematical Tools for Economics. (3) Two hours of lecture and one hour of discussion per week. Prerequisites: Mathematics 53 and 54 or equivalent and consent of instructor. The course provides a rigorous abstract treatment of the elements of real analysis and linear algebra central to current research in economics. The course develops in the students the ability to read mathematical proofs and to compose simple proofs on their own. (F,SP) Staff

206. Mechanism Design and Agency Theory. (3) Two hours of lecture per week. Prerequisites: 201B and 209A or consent of instructor. Formerly 209B. This course will study the optimal design mechanisms in the presence of incomplete information and imperfect observability. The course will begin with the ‘classic’ principal-agent problem and will then develop its applications to the ‘implicit contracts’ theory of agency and to the choice of government policies for regulated industries. The second half of the course will treat the design of auctions, regulation with costly or imperfect monitoring, mechanism design with limited contracts. Staff

207A. Mathematical Economics. (3) Two hours of lecture per week. Twelve weeks per semester class time and preparation. Prerequisites: Math 104 and 110 or Statistics 101. Mathematical analysis of economic theory. The problems treated involve as wide a range of mathematical techniques and of economic topics as possible, including theories of preference, utility, demand, personal probability, games and general equilibrium. Also listed as IDS 213A-213B and Math 213A-213B. Staff

208. Microeconomic Theory Seminar. (3) Course may be repeated for credit. Two hours of seminar per week. Prerequisites: Consent of instructor. Staff

209A. Theory and Application of Non-Cooperative Games. (3) Two hours of lecture per week. Prerequisites: Consent of instructor. This class will study both pure game theory and its application to such problems as oligopoly pricing, non-cooperative bargaining, predatory pricing, and optimal auctions. The focus will be on game theory as a modelling process as opposed to a body of known results. Staff

209B. Theory and Application of Non-Cooperative Games. II. (3) Two hours of lecture per week. Must be taken on a satisfactory/unsatisfactory basis. Prerequisites: 209A or consent of instructor. The course will cover basic theory in 209A; provide a more thorough treatment of topics covered in 209A; will cover a selection of advanced topics. Staff

210A. Introduction to Economic History. (3) Two hours of lecture per week. Survey of some central themes in world economic history. Required of all Ph.D. candidates in economics. Staff

210B. Topics in European Economic History. (3) Two hours of lecture per week. Prerequisites: 210A. A survey of some central themes in European economic history. Staff

210C. Topics in American Economic History. (3) Two hours of lecture per week. Prerequisites: 210A. A survey of some central themes in American economic history. Staff

211. Seminar in Economic History. (3) Course may be repeated for credit. Two hours of seminar per week. Prerequisite: Consent of instructor. Staff

215A. Political Economics. (3) Two hours of lecture per week. Prerequisites: 211A prerequisite to 215B. Tools of political economics: preferences and institutions, electoral competition, agency, partisan politics. Redistributive politics: general interest politics, special interest politics. Comparative politics: electoral rules, separation of powers, political regimes. Dynamic politics: fiscal policy, growth. (F,SP) Roland

218. Seminar in Psychology and Economics. (3) Two hours of seminar per week. A graduate seminar in the field of behavioral economics. (F,SP) Della Vigna, Nagel, Rabin

219A. Foundations of Psychology and Economics. (3) Two hours of lecture per week. Prerequisites: 210A-210B or consent of instructor. This course presents psychological and experimental economics research demonstrating the role that self-interest, rationality, self-interest, and other classical assumptions of economics and explores ways that these departures can be mathematically modeled and incorporated into mainstream positive and normative economics. The course will focus on the behavioral evidence itself, especially on specific formal assumptions that capture the findings in a way that can be used by economists. Economic applications will be used for illustrative purposes, but the course will emphasize formal theory. (F,SP) Staff

219B. Applications of Psychology and Economics. (3) Two hours of lecture per week. Prerequisites: 219A, 240A-240B or consent of instructor. This course will build off of the material presented in 219A. It will expand on the psychological and experimental economic research presented there, but will emphasize a range of economic applications and especially empirical research. (F,SP) Staff

219C. Topics in Psychology and Economics. (3) Two hours of lecture per week. Prerequisites: 219A, 240A-240B or consent of instructor. This course will cover special topics that extend the material from 219A and 219B, with an emphasis on further empirical applications. (F,SP) Staff

219D. Experimental Economics. (3) Two hours of lecture per week. Prerequisites: 219A or consent of instructor. This course will introduce students to the methods and findings of experimental economics. (F,SP) Staff

220A. Industrial Organization. (3) Two hours of lecture per week. Prerequisites: 210A. Market structure, conduct and performance in the unregulated sector of the American economy. Public policies related to the promotion or restriction of competition. Staff

220B. Industrial Organization. (3) Two hours of lecture per week. Prerequisites: 220A. Continuation of study of economics of regulated industries and the consequences of regulation for economic performance. Staff

220C. Special Topics in Industrial Organization. (3) Two hours of lecture per week. Prerequisites: 220A. See course announcement for current topics. Staff

221. Seminar in Industrial Organization: Regulation and Public Enterprise. (3) Course may be repeated for credit. Two hours of seminar per week. Prerequisites: Consent of instructor. Staff

222. Economics of Innovation. (3) Course may be repeated for credit. Two hours of seminar per week. Must be taken on a satisfactory/unsatisfactory basis.
Study of innovation, technical change, and intellectual property, including the industrial organization and performance of high-technology industries and firms; the use of economic, patent, and other bibliometric data for the analysis of technical change; legal and economic issues of intellectual property rights; science and technology policy; and the contributions of innovation and diffusion to economic growth. Methods of analysis are both theoretical and empirical, economic and case study. (F,SP) Staff

C222. Economics of Innovation. (3) Course may be repeated for credit. Students will receive no credit for C222 after taking 222. Three hours of lecture per week. Technical change and intellectual property, including the industrial organization and performance of high-technology industries and firms; the use of economic, patent, and other bibliometric data for the analysis of technical change; legal and economic issues of intellectual property rights; science and technology policy; and the contributions of innovation and diffusion to economic growth. Methods of analysis are both theoretical and empirical, economic and case study. Also listed as Ph.D. in Business Administration C279I. (F,SP) Staff

224. Economics of Institutions. (3) Two hours of lecture per week. This course develops the proposition that institutions have pervasive ramifications for under-developed areas of organization. A comparative institutional approach is employed whereby the transaction is made the basic unit of analysis and alternative modes of organization are assessed with respect to their comparative contracting properties. Staff

C225. Workshop in Institutional Analysis. (2) Students are expected to develop an understanding of institutional analysis and electronic models of organization. A comparative institutional approach is employed whereby the transaction is made the basic unit of analysis and alternative modes of organization are assessed with respect to their comparative contracting properties. Staff

230A. Public Economics. (3) Two hours of lecture per week. The economic and policy analysis of government expenditures, taxes, and intergovernmental fiscal relations. 230A is not a prerequisite for 230B. Staff

230B. Public Economics. (3) Two hours of lecture per week. Government intervention changes opportunities and incentives for firms, families, individuals, service providers, and state and local government. This course considers the incentive effects of government subsidies and the role of public expenditure programs. The primary emphasis will be in the examination of the effect of social expenditure programs on individuals and families. Most of the papers will be empirical. The course will not contain an explicit section on methodology and econometric techniques; instead, relevant econometric techniques (e.g., discrete choice, duration analysis) will be discussed in the context of the empirical literature. (F,SP) Staff

C231. Seminar in Public Sector Economics. (3) Course may be repeated for credit. Two hours of seminar per week. Prerequisites: Consent of instructor. Staff

234A. Macroeconomic Finance. (3) Three hours of lecture per week. Formerly 236D. Introduction to macroeconomic finance. Course covers representative portfolio choice, capital market pricing model (CAPM), consumption based models, dynamic equilibrium asset pricing theories, and current issues in behavioral finance. Strong emphasis on household finance and risk-sharing. Course is both theoretical and empirical. (F,SP) Staff

C24C. Financial Decision-Making in Firms. (3) Three hours of lecture per week. Prerequisites: 240A-240B or equivalent. This course provides a theoretical and empirical treatment of the core topics in corporate finance including internal corporate investment; external corporate investment (mergers and acquisitions); capital structure; capital stock; going concern; corporate governance. (F,SP) Staff

235. Financial Economics Seminar. (1) One and one-half hours of seminar per week for eight weeks. Must be taken on a satisfactory/unsatisfactory basis. This course presents speakers who work on the boundary of economics, finance, topics including asset pricing, behavioral finance, and corporate finance. (F,SP) Staff

236A. Aggregate Economics. (3) Two hours of lecture per week. Prerequisites: For 236A: 201A-201B and 202A-202B. For 236B: 236A. Macroeconomic models; theory and practice of aggregate economic policy; and expectations theory. Performance and expectations. (F,SP) Staff

236C. Capital and Economic Growth. (3) Two hours of lecture per week. Formerly 202C: An examination of the roles of time and capital in the processes of individual and societal production and consumption. Prerequisites: Consent of instructor. Staff

240A. Econometrics. (5) Four hours of lecture and two hours of discussion per week. Prerequisites: i) 100A or 101A or equivalent; 100B or 101B or equivalent; ii) Mathematics 53 and 54, or equivalent; iii) Statistics 131A or equivalent. Formerly 240. Basic preparation for the Ph.D. program including probability and statistical theory and the classical linear regression model. (F,SP) Staff

240B. Econometrics. (4) Three hours of lecture and two hours of discussion per week. Prerequisites: 240A or equivalent. Topics include regression models, including generalized least squares; instrumental variables estimation; generalized method of moments; time series analysis; and nonlinear models. (F,SP) Staff

241A. Econometrics. (4) Three hours of lecture per week. Prerequisites: 241A. Simultaneous equations and time-series models. (F,SP) Staff

242. Seminar in Econometrics. (3) Course may be repeated for credit. Two hours of seminar per week. Prerequisites: 240A-240B. Staff

243. Special Topics in Econometrics. (2) Course may be repeated for credit. Two hours of seminar per week. Prerequisites: 241A-241B. See department course description each semester. Staff

244. Applied Econometrics. (3) Three hours of lecture per week. Prerequisites: 240A-240B. Methods of applied econometrics, with emphasis on alternative modeling strategies and problems met in practice. Intended for doctoral students conducting empirical research. Staff

250A-250B. Labor Economics. (3,3) Two hours of lecture per week. Prerequisites: 250A is prerequisite to 250B. Consultant of instructor. Analysis of labor market behavior. Staff

250C. Labor Economics. (3) Two hours of lecture per week. Prerequisites: 250B. Analysis of labor market behavior. Staff

251. Seminar in Labor Economics. (3) Course may be repeated for credit. Two hours of seminar per week. Prerequisites: Consent of instructor. Seminar for students at the doctoral dissertation level. Staff

260A-260B. Comparative Economics. (3,3) Two hours of lecture per week. Prerequisites: 260A is prerequisite to 260B. New issues raised by transition for economics. Property rights, role of the state, institutional change, reform design, political economy of privatization. Allocative changes: speed of sectoral reallocation, price liberalization, output fall and macroeconomic dynamics, law enforcement, dynamics of institutional change. (F,SP) Staff

261. Seminar in Comparative Economics. (3) Course may be repeated for credit. Two hours of seminar per week. Prerequisites: Consent of instructor. Staff

270A-270B. Development Economics. (3,3) Two hours of lecture per week. Problems of underdevelopment and poverty, policy issues and development strategies. Staff

C270A. Microeconomics of Development. (3) Three hours of lecture per week. Prerequisites: Graduate standing. Theoretical and empirical analyses of poverty and inequality, household and community behavior, and contract and institutions in the context of developing countries. Also listed as Agricultural and Resource Economics. Staff

276C. Development Economics. (3) Two hours of lecture per week. Basic macro-policy planning with investment project analysis. Staff

276D. Special Topics in Economic Development. (3) Two hours of lecture per week. Prerequisites: See course announcement. See course announcement for current topics and prerequisites. Staff

279L. Seminar in Economic Development and Planning. (3) Course may be repeated for credit. Two hours of seminar per week. Prerequisites: Consent of instructor. Staff

C275A. Economic Demography. (3) Two hours of lecture per week. Economic consequences of demographic change in developing and developed countries including capital formation, labor markets, and intergenerational transfers. Economic determinants of fertility, mortality and migration. Also listed as Demography C275A. (F,SP) Lee

275B. Selected Topics in Economic Demography. (3) Two hours of lecture per week. A review of recent literature in selected areas of economic demography; content will range from year to year. Staff

C275B. Aging: Economic and Demographic Aspects. (2) Two hours of lecture per week for seven and one-half weeks. Course covers demographic and economic aspects of population aging. Also listed as Demography C236. (SP) Staff

280A. International Economics. (3) Two hours of lecture per week. The world economy as a general equilibrium system. The theory of international economics, trade policy. Staff

280B. International Economics. (3) Two hours of lecture per week. Prerequisites: 280A is not prerequisite to 280B. This course develops basic theoretical models for studying issues in open-economy macroeconomics. The current account and the trade balance, international capital market integration, developing country debt problems, the real exchange rate, fiscal policy in the open economy, and international policy coordination. Staff

280C. International Economics. (3) Two hours of lecture per week. Prerequisites: 280B. This course is an empirical treatment of open-economy macroeconomics. Modern macroeconomics, statistical tools, the determination of the trade balance and income under fixed and floating exchange rates, purchasing power parity, devaluation in small open economies, quantifying the degree of international capital mobility, implications for the effectiveness of monetary and fiscal policy, international interdependence and coordination, models of exchange rate determination. (SP) Staff

B prefix=course satisfies R&C requirement
C prefix=course satisfies R&C requirement
P prefix=course satisfies R&C requirement
H prefix=honors course
R prefix=course satisfies R&C requirement
*Professor of the Graduate School
†Recipient of Distinguished Teaching Award
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Sarah Warschauer Freedman, Ph.D. Stanford University. Teaching and learning written language
Bruce Fuller, Ph.D. UCLA. Research University, impact of public policy on schools, families, and classrooms
Bernard R. Gifford, Ph.D. University of Rochester. Policy analysis, technological education
W. Norton Grubb, Ph.D. Harvard University. Education policy, information policy
†Gyöngyi Hull, Ph.D. University of Pittsburgh. Written language, technology and education, adult literacy
†Claire Kramsch, Ph.D. University of Paris-IX. Sociocultural aspects of foreign language acquisition
†Marcia C. Linn, Ph.D. Stanford University. Cognitive science
Judit Warren Little, Ph.D. University of Colorado. Teachers' work lives and career; social policy and school reform; qualitative methods
‡P. David Pearson, Ph.D. University of Minnesota. Early reading and literacy development
Sophia Rabe-Hesketh, Ph.D. King's College, University of London. Educational statistics, multilevel and latent variable modeling
Geoffrey B. Saxe, Ph.D. University of California, Berkeley. Mathematics cognition in children; culture and cognitive development
Alan H. Schofield, Ph.D. Stanford University. Problem solving, metacognition, mathematical cognition
Harley Shaiken, B.A. California State University, Fullerton. Social policy, skill formation, training, work organization and global production
David S. Stern, Ph.D. Massachusetts Institute of Technology. Education and work, resource allocation in schools
Elliott Turiel, Ph.D. Yale University. Social and cognitive development
Barbara Y. White, Ph.D. Massachusetts Institute of Technology. Science education; cognition, computers, learning
Mark Wilson, Ph.D. University of Chicago. Psychometrics, educational statistics
Paul H. Ammon, Ph.D. (Emeritus)
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†Benfley Edwards, Ph.D. (Emeritus)
†Lily Wong Filimore, Ph.D. (Emeritus)
†David P. Gardner, Ph.D. (D.H. [hon.] (Emeritus)
†Curtis D. Hardtke, Jr., Ph.D. (Emeritus)
†John G. Hurst, Ph.D. (Emeritus)
†James L. Jannett, Ph.D. (Emeritus)
†Arthur R. Jensen, Ph.D. (Emeritus)
†Jean Lave, Ph.D. (Emeritus)
†William D. Rohrer Jr., Ph.D. (Emeritus)
†Robert B. Ruddell, Ed.D. (Emeritus)
†Lloyd F. Scott, Ph.D. (Emeritus)
†Carol B. Stack, Ph.D. (Emeritus)
†Lawrence H. Stewart, Ph.D. (Emeritus)
†James C. Stone, Ed.D. (Emeritus)
†Paul T. Takak, Ph.D. (Emeritus)
†Alan B. Wilson, Ph.D. (Emeritus)
Associate Professors
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Anne E. Cunningham, Ph.D. University of Michigan. Cognitive consequences of literacy, reading process and disabilities
†Jabari Mahri, Ph.D. University of Illinois at Chicago. Literacy development in out-of-school settings
Kathleen E. Minstrell, Ph.D. University of Massachusetts. Development of scientific cognition in young children
†Heinrich Mintrop, Ph.D. University of California, Los Angeles. Language socialization, literacy development, urban schooling
†Sarah Warshauer Freedman, Ph.D. Stanford University. Educational policy, school improvement, accountability systems, cross-national studies
†Daniel H. Perstel, Ph.D. Stanford University. History of education, urban school reform
Michael Silverman, Ph.D. University of Pittsburgh, Reasoning, learning, cognitive science
†Herbert D. Simon, Ph.D. (Emeritus)
†Prentice Starkey, Ph.D. University of Texas at Austin. Child development and early education
†Frank C. Worrell, Ph.D. University of California, Berkeley. Psychosocial development in at-risk African American, Caribbean and gifted adolescents
†Donald A. Hansen, Ph.D. (Emeritus)
Assistant Professors
Dar Abramson, Ph.D. Northwestern University. Learning sciences
†Cynthia E. Coburn, Ph.D. Stanford University. Relationship of policy and practice of work, urban schools, qualitative research methods
†Ingrid Seyen-Ocht, Ph.D. Stanford University. Political economy of urban education
Laura Sterponi, Ph.D. University of Rome, “La Sapienza” Ph.D. University of Toronto. Literacy, narrative development
†Lily Wong Fillmore, Ph.D. University of Southern California, New York University. School psychology, learner-centered education, school psychology, policy, assessment, service learning and experiential education
†R. K. Jainemaya Singh, Ph.D. Boston University. Community psychology, mental health
Carola A. Tateishi, M.A. University of California, Berkeley. (Director, Bay Area Writing Project)
†Derek Van Rheenen, Ph.D. University of California, Berkeley. Study of culture, and education and academic excellence
†Gary Yawes, Ph.D. University of California, Berkeley. Development of social cognition and moral reasoning: children’s peer interactions

Academic Coordinators
Christine M. Ciklo, M.A. Lehman College, CUNY. (English Credential Program)
Carolyne S. Hartsoq, Ph.D. University of California, Berkeley. (School Psychology Program)
Janette Hernandez, M.A. University of the Pacific (Principal Leadership Institute)
†Della Peretti, Ph.D. University of California, Berkeley. (Developmental Teacher Education Program)
†Lynda Tredway, M.A. Catholic University. (Principal Leadership Program)
†Daniel J. Zimmier, M.A. University of California, Berkeley. (Master’s and Credential in Science and Mathematics Education Program)

Graduate Program Overview
The Graduate School of Education is committed to high-quality scholarship and professionalism in order to prepare future leaders of education practice, policy, and research. Faculty research and teaching are grounded equally in theory and practice. The Graduate School of Education offers Doctor of Education (Ed.D.), Master of Arts (M.A.), and credential degree programs. The Ph.D. degree is designed for students interested in pursuing scholarly research and academic careers in education. The Ed.D. is a professional degree designed for individuals seeking advanced professional preparation to become school administrators or other educational leaders. The M.A. degree serves the interest of students who want to carry out a career in education, either as an education researcher or as an education practitioner. Credential programs, which all contain an M.A. component, are designed for students who plan to work in schools as teachers, counselors, and county administrators, and school psychologists.

Areas of Study
Degree and credential programs are grouped under three main areas of study: 1) Cognition and Development; 2) Language and Literacy, Society and Culture; and 3) Policy, Organization, Measurement, and Evaluation.

The Cognition and Development (CD) area of study focuses on the interplay among cognitive, social, and educational processes that give rise to development of human knowledge and experience. The faculty concentrate on learning in mathematics, science, and technology, as well as broader cognitive, social, and moral development. Faculty and student research typically occurs in field settings (classrooms, museums, informal social groups), providing fertile sites for conceptual advances, as well as the implementation of educational practices. Cognition and Development supports both professional and academic programs, each enriching the other in courses and research opportunities.

Faculty and students in Language and Literacy, Society and Culture (LLSC) are interested in studying, designing, and participating in transformative approaches to individual and social development, approaches within schools and class-
rooms but also across diverse sites and contexts in communities, workplaces, and social movements. LLSC combines sharply focused examinations of talk and activity, language and literacy, and attempts to ground a partial reading of other societal forces in American culture. In particular, the course examines the nature and contexts of American "student-athlete," as well as identities of race, class, gender, and sexual orientation as they relate to sport in higher education. (F,SP) Staff

90A. Learning from Text in Anthropology. (1-2) One to two hours of lecture/discussion per week per unit. Must be taken on a passed/not passed basis. Formerly 90. This course assists undergraduates with reading and study skills. Students learn successful approaches to learning from their texts in Anthropology. Staff

90E. Learning from Text in Education. (1-2) One to two hours of lecture/discussion per week per unit. Must be taken on a passed/not passed basis. Formerly 90. This course assists undergraduates with reading and study skills. Students learn successful approaches to learning from their texts in Education. (F,SP) Staff

90F. Learning from Text in Ethnic Studies. (1-2) One to two hours of lecture/discussion per week per unit. Must be taken on a passed/not passed basis. Formerly 90. This course assists undergraduates with reading and study skills. Students learn successful approaches to learning from their texts in Ethnic Studies. (F,SP) Staff

97. Field Studies. (1-4) Course may be repeated for credit. Field study. Must be taken on a passed/not passed basis. Prerequisites: Restricted to freshmen and sophomores. Consent of instructor. University organized and supervised field programs involving experiences in schools and school-related activities. (F,SP) Staff

98. Directed Group Study. (1-4) Course may be repeated for credit. Enrollment is restricted; see the Introduction to Courses and Curricula section of this catalog. Group meetings to be arranged. Must be taken on a passed/not passed basis. Prerequisites: Consent of instructor. (F,SP) Staff

99. Supervised Independent Study. (1-4) Course may be repeated for credit as topic varies. Enrollment is restricted; see the Introduction to Courses and Curricula section of this catalog. Tutorial. Must be taken on a passed/not passed basis. Prerequisites: Consent of instructor. Lower division independent study or research on topics relevant to Education that are not covered in depth by other courses. Topics to be initiated by students. (F,SP) Staff

Upper Division Courses

100. Educational Psychology for Teachers. (3) Three hours of lecture per week. Prerequisites: Ad- served to teaching credential program. Lectures on topics of special interest to teachers, including child and adolescent development, the teaching-learning process, and classroom evaluation. Application of research to classroom practice. Written consultation on actual classroom problems. Written assignments and final examination required. Staff

112. Reforms in Elementary Education: Psychological and Sociocultural Foundations. (3) One hour of lecture, one hour of structured discussion, and one hour of group work per week. Prerequisites: Consent of instructor. Background in psychology. The course introduces students to relationships between research on cognitive development and reforms in elementary teaching. The syllabus is organized in modules that link research and classroom practice. For example, in a module on children's mathematics, we analyze reflections from children's strategic solving of math problems and consider how this research has informed teaching practices. Students design and carry out a project for each module that links research and observations in elementary classrooms through concurrent enrollment in one unit of 197. Gearhart

114A. Early Development and Education. (4) Three hours of lecture and two hours of fieldwork per week. Theories and research on early development from birth through childhood with special attention to relationships between developmental theory and educational practice. Directed field observation of developmental phenomena and educational practice. Starkey

114C. Practicum in Early Development and Education. (4) Two hours of seminar and six hours of fieldwork per week. Theory, research, and field experiences in early development and education. Students
conduct educational activities with children in classroom
rooms in preschool, elementary school, or after-school programs. Activities include assisting teachers in the development of instructional materials, teaching children computer software, academic tutoring, and supporting parental involvement in schooling. Starkey

C116A. Perspectives on the Young Child in Society. (3) Two hours of lecture and one hour of discussion per week. This course provides a multidisciplinary approach to understanding the development needs of children from birth to the context of the sociocultural dimensions introduced in social studies in which they are cared for and educated. Specific attention will be focused on how children’s experiences within and beyond their families vary by social, cultural, and ethnic identity and family needs and preferences, and special needs. Students will examine how expectations for young children change over time and will become familiar with current and past policy debates about the education and social
well-being of young children. Also listed as Social Welfare C128 and Psychology C104, (F, SP) Berrick, Whitebook

140AC. Literacy: Individual and Societal Development. (3) Three hours of lecture/discussion and workshops per week. This course combines theory and practice in reading and writing to develop understanding of how literacy is acquired. Students will learn about the history of literacy, ways of assessing and developing literacy in classrooms, and how literacy is defined in various social contexts, including schools. This course will focus on issues of the role of language in societies and on the nature of instruction in literacy. Students will be asked to read and discuss various readings, and to participate in discussions about their own experiences with literacy. Staff

141. Introduction to the Teaching of English. (3) Two hours of lecture and three hours of fieldwork per week. Prerequisites: Upper division standing or consent of instructor. This course introduces pedagogical and theoretical issues confronting English and English language arts teachers today; curriculum trends and teaching practices; influence of reform efforts since the 1990s on English and language arts curriculum and practice; course assignments to include field work, interviews, reading and reports. Mahiri, Freedman

145. Literacy through Literature. (3) Three hours of lecture per week. Formerly 145. Exploration of the role that literature can play in the acquisition of literacy in a first and second language. Linguistic and psycholinguistic issues of orthography and literacy, schema theory, and reading research. Literary issues, stylistics and critical reading, reader response, structure of narratives. Educational issues: the literary text in the social context of its production and reception by intended and non-intended readers. Also listed as German C106, Kramsch

147. Writing from the Field: The Social Issues of Literacy. (4) Three hours of lecture and two hours of laboratory per week. Prerequisites: Completion of reading and composition requirement (1A and 1B) or consent of instructor. This course will survey the development of literacy from a variety of disciplinary perspectives, paying particular attention to theories that emphasize social and political issues related to reading and writing. Part of the course will entail two hours of volunteer preparation in an after-school program. Over the semester, students will use their experiences as volunteers to test the usefulness of literacy theories and inform their writing. Also listed as College Writing Program C115, Staff

149. Foundations for Teaching Language Arts. (3) Three hours of lecture. Prerequisite: Admission to a teaching credential program. Course builds upon completion of CA6 and 226. Introduction to reading and writing instruction in elementary school settings, basic literacy skills, instructional methods and approaches, assessment procedures, and reading and writing theories. Cunningham

150. Foundations for Teaching Social Studies. (1) Three hours of lecture for five weeks. Prerequisites: Admission to a teaching credential program. Formerly part of 149. Lectures and workshops on curriculum, instructional theory, and methods for teaching social studies in elementary schools. Staff

162A. Teachers’ Work. (3) Three hours of lecture/discussion per week. This course is offered as part of the undergraduate education minor, examines the multiple dimensions of teachers’ work by drawing on theories of teacher socialization and teacher professional learning, and exploring representations of teachers in the media and popular culture, as well as in relevant academic literature. Students will be introduced to the current policy, social, cultural, historical, professional, economic, and international contexts of the teaching profession. Students will have the opportunity to examine these aspects of teachers’ work by interacting with teachers in the field. (SP) Mayer

180. Logic of Inquiry. (3) Three hours of lecture per week. This course is designed to provide an overview of the major foundational issues of empirical research with the aim of developing a critical and rigorous approach to empirical inquiry, deductive and inductive logic, the structure of scientific theories, justification, falsification, the role of values, prediction and the nature of causality. Staff

185. Gender and Education in the Americas. (3) Three hours of lecture/seminar per week. This course is designed to provide an overview of the major discussions and debates in the area of gender and education. The main questions this course addresses are: What are the effects of cultural, social, and economic conditions on reproducing gender roles? How can education promote gender equity? We will explore these questions through a series of readings and case studies from the United States, Canada, and Latin America. The course will begin by surveying progress toward gender equality in formal education over the past century. We will examine how social movements, government policies, and international cooperation in education have created greater educational opportunities for both males and females. In the second part of the course, we examine a variety of topics that illustrate how we learn about gender in both school and society. Topics will include academic course taking and achievement, identity, media messages, and athletics. In the final part of the course, we will examine strategies that use literature in the classroom to reduce gender bias and exclusion. Throughout the course, we will pay close attention to the intersection of gender, race, and social class. (F) Murphy-Graham

186AC. The Southern Border. (4) Four hours of lecture/discussion per week. The southern border—from California to Florida—is the longest physical divide between the First and Third Worlds. This course will examine the border as a distinct landscape where North-South relations take on a specific spatial and cultural dimension, and will examine the tension as well as the ground for such issues as free trade, immigration, and ethnic politics. Also listed as Ethnic Studies 159AC and Geography 159AC. This course satisfies the American Cultures requirement. Manz, Shakien

187. Cooperatives and Community Development: Education for Ownership. (3) Four hours of lecture per week. A survey of cooperative development strategies to strengthen communities, create economic opportunity and provide needed services. Examines the fundamental role of the cooperative for member-owned, democratically controlled organizations. Students will design and assess the feasibility of their own cooperative venture. Hurst

189. Democracy and Education. (4) Four hours of lecture per week. Prerequisites: Junior standing or consent of instructor. Education as a vehicle for furthering the ideals of democratic societies—critical study of principles, philosophies, theories, and practices development, understanding, commitment, and skills to empower a citizenry dedicated to achieving equality, justice, and peace in the world. Hurst

190. Current Issues in Education. (4) Four hours of lecture/discussion per week. Through lecture and discussion, students will examine current issues in education. Coursework will begin with theoretical and methodological foundations of education. Students will also examine different educational philosophies, purposes, and methods. Students will use this information as an aid in analyzing several problem areas. Areas addressed are not limited to, but will include democracy and education, testing and assessment, politics and education, and education and social inequality. (F, SP) Hurst

190B. Unraveling Education: A Participatory Inquiry. (4) Four hours of lecture per week. Prerequisites: 190. Course builds upon 190. Through dialogue, students will further explore critical issues and their connections. Students will form small working groups to identify, develop, investigate, and teach a topic of their choice. We will develop and emphasize multiple perspectives. Hurst

191A. Workplace Experience in the Analysis of Work. (4) Three hours of lecture per week. This course is intended for undergraduates who are working while enrolled at Berkeley. It will provide an opportunity to analyze issues in the workplace such as employees’ opportunities for learning, involvement in problem-solving, compensation and incentives, and how changing technology affects demand for skills. Students will also have the opportunity to pursue their own academic studies in the workplace. Stern

C193A. Environmental Education. (3) Five and one-half hours of lecture/discussion and six hours of fieldwork per week. Theory and practice of translating ecological knowledge, environmental issues, and values into educational forms for all age levels and all facets of society, including schools. Concentrated experience in participatory education. Also listed as Environ Sci, Policy, and Management C193A. Hurst

C193B. Environmental Education. (3) Five and one-half hours of lecture/discussion and six hours of fieldwork per week. Theory and practice of translating ecological knowledge, environmental issues, and values into educational forms for all age levels and all facets of society, including schools. Concentrated experience in participatory education. Also listed as Environ Sci, Policy, and Management C193B. Hurst

195. Special Topics in the Foundations of Teaching. Course may be repeated for credit. One hour of seminar per week per unit. Prerequisites: Consent of instructor. Topics to vary from semester to semester and section to section.

195A. Special Topics in the Foundations of Teaching. (1-4) School administration. Staff

195B. Special Topics in the Foundations of Teaching. (1-4) Reading and language arts. Staff

195C. Special Topics in the Foundations of Teaching. (1-4) Mathematics and science. Staff

195D. Special Topics in the Foundations of Teaching. (1-4) Psychology as applied to teaching. Staff

196. Teaching One-on-One: Principles of Tutoring. (3) Course may be repeated for credit. Two hours of laboratory per week. A course for prospective tutors desiring to prepare for placement in local elementary and secondary schools. It introduces tutors to basic skills in tutoring within two overlapping categories: instructional and interpersonal. The instructional dimension introduces strategies for helping elementary and secondary school students overcome difficulties in learning. The interpersonal dimension introduces approaches for improving communication and building trust in the tutoring relationship. Simons

197. Field Studies. (1-4) Course may be repeated for credit. One to four hours of fieldwork per week. Must be taken on a passed/not passed basis. Prerequisites:
Consent of instructor. University organized and supervised field programs involving experiences in school and school-related activities. (F,SP) Staff

198. Directed Group Study. (1-3) Course may be repeated for credit as topic varies. Enrollment is restricted; see the Introduction to Courses and Curricula section of this catalog. Must be taken on a passed/not passed basis. Prerequisites: Consent of instructor, upper division standing. Group discussion, research, and reporting on selected topics. Enrollment is restricted, and students are recommended. (F,SP) Staff

199. Supervised Independent Study and Research for Undergraduates. (1-4) Course may be repeated for credit. Independent study. Must be taken on a passed/not passed basis. Prerequisites: Consent of instructor. (F,SP) Staff

Graduate Courses

200A. Cognitive Development. (3) Three hours of seminar per week. Prerequisites: Consent of instructor. Development of cognition from birth to maturity. Piagetian and information processing theories and research. Vygotsky’s theory. Primary emphasis on normal human development; secondary emphasis on atypical and animal cognition. Infant perception and cognition. Learning competencies, metacognition, and problem solving in middle childhood and adolescence. Cognitive underpinnings of academic skills. Relations between cognitive development and children’s home and school environments. Ammon, Starkey

200B. Social Development. (3) Three hours of lecture per week. Consent of instructor. An examination of theory and research on social development from childhood to early adulthood. Review of different theoretical orientations to social cognition, morality, and sexual development, and the role of social-environmental factors. Tunet

200C. Culture and Cognitive Development. (3) Three hours of lecture/discussion per week. Prerequisites: 200A and consent of instructor. This course explores advanced topic in Piaget’s and Vygotsky’s frameworks for the analysis of cognition development. Of particular concern is the representation of cultural processes in each treatment. Reading will include primary sources from these authors and contemporary writers who extend and critique the treatment of culture in each. Saxe

200D. Psychosocial Development: Identity, Culture, and Family. (3) Three hours of lecture per week. Prerequisites: One course in statistics. This course is a doctoral seminar in developmental psychology, with a broad focus on psychosocial development and its impact on educational achievement. The course begins with a discussion of Erikson’s psychosocial theory and the sociocultural perspectives of Vygotsky and other theorists. We then review some of the major psychosocial theories related to educational achievement, including competence, motivation, self-concept, self-efficacy, self-regulation, and volition. We touch briefly on moral development and values as psychosocial factors affecting correlates. We examine (a) how social and personal identity factors are used to explain underachievement (e.g., cultural ecological theory and stereotype threat), (b) the role of identity in different cultural groups, (c) the impact of these factors on teaching practices and classroom behavior, and (d) the role that identity plays in helping students develop a sense of future. (F) Worrell

201A. Psychology of Reading. (3) Three hours of lecture per week. Comparison and analysis of the psychological and linguistic evidence underlying whole language and traditional skills methods of reading instruction. Topics include reading readiness, emergent literacy, the English spelling system and decoding, vocabulary development, models of reading, individual differences, and comprehension and schema theory. Cunningham

201B. Seminars in Intellectual Development. (2) Consent of instructor. Repeatable for credit. Two hours of seminar per week. Prerequisites: Relevant courses from the 200 sequence and consent of instructor. Intensive examination of advanced topics, which will vary from year to year in the areas denoted by the titles of the following sections:

(1) Cognitive Development
(2) Learning and Memory Development
(3) Language. Staff

202D. Seminars in Social and Personality Development. (2) Course may be repeated for credit. Two hours of seminar per week. Prerequisites: Relevant courses from the 200 sequence and consent of instructor. Intensive examination of advanced topics, which will vary from year to year in the areas denoted by the titles of the following sections:

(1) Social Development
(2) Motivation
(3) Personality Development. Tunet

204C. Research Seminars: Inquiry in Educational Psychology. (3) Course may be repeated for credit. Three hours of seminar per week. Prerequisites: Consent of instructor. The doctoral program in Educational Psychology requires that students complete extensive projects of documentary and empirical research. As they engage in these projects, students will enroll (ordinarily during alternate years) in appropriate sections of this seminar. At each meeting, participants will present their own projects, and analyze those presented by others. Lampert

205. Instruction and Development. (3) Three hours of lecture per week. Prerequisites: consent of instructor. An examination of cognitive developmental approaches to instruction. Review of different theoretical orientations to learning, knowledge, representation, memory, literacy, motivation, self regulated learning, and classroom organization. Campione

207B. Individual Appraisal of Intelligence. (4) Three hours of lecture and six hours of fieldwork per week. Prerequisites: Consent of instructor. Theories of intelligence as applied to the assessment of intelligence, measurement concepts applied to intelligence tests, development, administration and interpretation of the WISC-R, Stanford-Binet, and other issues pertinent to intelligence testing. Current controversial issues in testing, including issues pertaining to test bias and legal aspects of testing. Staff

207C. Diagnosis of Handicapped. (4) Three hours of lecture and six hours of fieldwork per week. Prerequisites: Consent of instructor. Children’s curriculums are not standardized. Reviews current criteria for eligibility for programs for the handicapped and evaluates available procedures for making diagnostic decisions. Special topics may include diagnosis of learning disabilities, mental retardation, neurological handicaps, emotional and behavioral disorders. Staff

207D. Assessment and Education of Exceptional Pupils in Regular Classes. (2) One hour of lecture and one hour of discussion per week. Methods for assessment of handicapped children and implication for their education in regular classes. Such topics as non-discriminating testing, least restrictive environments, alternative programs, parent communication, interprofessional relationships, characteristics, behavior of exceptional pupils are covered in studies of individual exceptional children in regular classes. Staff

211A-211B. Human Development and Education. (4,4) Three hours of lecture/discussion and three hours of fieldwork per week. Admission to Developmental Teacher Education Program or consent of instructor. Introduction to theories of human development and their application to elementary and preschool education. Topics include cognitive development, moral and social development, character, behavior of exceptional pupils, course requirements, and other themes emerging from research in urban settings. Linn

211C-211D. Advanced Human Development and Education. (4,4) Three hours of lecture/discussion and three hours of fieldwork per week. Prerequisites: Admission to Developmental Teacher Education Program or consent of instructor. Advanced principles of human development and their application to teaching and learning school subjects. Also supervised child study, individual and small group tutoring, field experiences. Saxe, Staff

212. Adolescent Development and the Teaching of Secondary English. (3) Three hours of lecture/discussion per week. Prerequisites: Enrollment in the Multicultural Urban Secondary Credential Program. This graduate seminar relates the goals of secondary English teaching to three major themes in the study of adolescent development: racial/ethnic, social, and gender identity. These themes are then explored with reference to urban youth, along with other themes emerging from research in urban settings. The theme of identity is pursued further through a consideration of adolescent ‘‘othering’’ theories and their motivational consequences. Students write papers on related topics for a class anthology. (F,SP) Ammon

213A. Conceptual Bases for School Psychology. (3) Three hours of lecture and six hours of fieldwork per week. Historical and contemporary overview of the professional specialty of school psychology. Staff

213B. Theoretical and Scientific Bases for School Psychology Practice. (3) Three hours of lecture per week. Examines the empirical evidence for developmental and learning models in relation to the school curriculum and school organization from elementary through high school. Staff

213C. School-Based Consultation. (3) Three hours of lecture per week. Theories of consultation, consultation methods, and research on consultation applicable to primary and secondary prevention of school failure and school psychology practice. Lambert

213D. Educational Interventions for the School Psychologist. (3) Three hours of lecture per week. Theories and procedures for individual and group assessment of children’s learning and behavior problems as applied to the design of individual and group programs in the classroom. Staff

213L. Laboratory for School Psychology. (1) Must be taken on a satisfactory/unsatisfactory basis. Laboratory section to evaluate field work records and for supervision of school assignment. Must be taken concurrently with 213A-213B-213C-213D. Staff

214. Human Development and Education Seminar. (1) Course may be repeated for credit. One and one-half hour seminar per week. Students in the graduate program in human development will be examined on a satisfactory/unsatisfactory basis. Prerequisites: Graduate standing and consent of instructor. Reports and discussion of original research in the area of human development. Staff

215. Socialization Processes Within the Family. (3) Three hours of lecture per week. This course provides an overview of theoretical perspectives on family socialization. We review the literature on parent beliefs and child-rearing practices and study how families affect children’s social development. We also examine families in the context of culture and social class. The course concludes by focusing on the relationship between families and schools. Course requirements: class participation, three short papers, reaction notebook. Holloway

222A. Programming and Problem Solving. (3) Three hours of lecture per week. This course will analyze how experts and novices solve programming problems, examine recent investigations of program design and implementation, and relate these investigations to research on learning and instruction. Using these insights, current programming instruction will be examined. Other topics include: programming environments such as Macintosh instruction, programming text books, and student behavior when solving programming problems. Linn

222B. Special Problems in Mathematics, Science and Technology Education. (2-6) Course may be re-
C229A. Proseminar: Problem Solving and Understanding. (3) Three hours of lecture per week. Pre-requisites: Consent of instructor. Students will examine and analyze problem solving and problem understanding in their own and in other people's thinking. The course will be designed to help students develop skills useful in this area, with particular emphasis on developing in students the ability to think critically and analytically, to articulate and defend their own positions, and to evaluate the positions of others. The course will also provide opportunities to overview the theoretical perspectives and research literature relevant to the study of cognitive processes and problem solving. The course will involve in-class research and analysis, and student research. For each activity, we will look at the full breadth of methodology, from "how-to" methods and specific areas of concern to general questions including: what constitutes objective data, what are strengths and weaknesses of methods in regard to various issues, and what are the relations between theory and data? Ranney

C229B. Metacognition. (3) Three hours of seminar per week. The course explores contemporary research on metacognition, with a particular emphasis on "higher order thinking skills" and metacognitive problem solving. We discuss various frameworks for characterizing mathematical behavior and various methodologies for examining it. As an "action oriented" course in the EMST curricular sequence, this course includes a major group project, students engage in research incorporating the main ideas studied in the course. Schoenfeld

24C. Gender, Mathematics and Science. (3) Three hours of seminar per week. The course explores commonly asked questions concerning gender, mathematics, and science. We will discuss whether these are appropriate questions and examine evidence related to the questions. This course will also consider whether policies and practices concerning gender, mathematics, and science are being changed and, if so, identify some of the steps that could be taken to improve the current situation. Linn

225C. Cognitive Approaches to Computer System Design. (2) Two hours of lecture per week. This course, based largely on reading and critical analysis, will survey and analyze some of the mental processes involved in the design and development of operating and computing systems (e.g. text editing, operation of calculators and user interface to computer systems, activity structures involving multiple operation tools and programming) as well as cognitive constructs being developed to understand performance. Requirements include three analytical papers. d’Essea

225D. Computer System Design Project Laboratory. (3) Three hours of laboratory per week. Prerequesites: Consent of instructor. The system design project laboratory is an ancillary offering intended to put the ideas from 225C—Cognitive Approaches to Computer Systems Design—into practice. The principle requirement will be a substantial software implementation and write-up. With instructor’s consent, the project laboratory may be taken simultaneously or sequentially with 225C. In cases of extraordinary preparation, the laboratory course may be taken independently. d’Essea

226. Constructive Epistemology. (3) Three hours of lecture per week. Many approaches to education take the knowledge of the learner to be taught as fixed, and unchangeable objects to be things like methods. By focusing on knowledge per se: what is it; how is it organized and encoded in humans, we are led to questions about what should be taught, how one should approach learning, and how one should teach. How do the properties of the material basis of literacy translate into social value, and how? Are new literacies really possible? d’Essea

231. Introduction to Secondary School. (2) Course may be repeated for credit. Two hours of lecture per week. Prerequisites: Admission to a credential program. Three hours of seminar per week. An examination of research relevant to the analysis and development of children’s problem solving and understanding in the elementary school classroom. Research considered includes cognitive science analyses of problem solving and understanding; meta-cognitive and epistemological perspectives on cognition and learning; classroom-based subject-matter curricular analyses in mathematics, literacy, history, and science; and social-cultural analyses of school practices. (F) Metz

232. Problem Solving and Understanding in the Elementary School Classroom. (3) Three hours of seminar per week. An examination of research relevant to the analysis and development of children’s problem solving and understanding in the elementary school classroom. Research considered includes cognitive science analyses of problem solving and understanding; meta-cognitive and epistemological perspectives on cognition and learning; classroom-based subject-matter curricular analyses in mathematics, literacy, history, and science; and social-cultural analyses of school practices. (F) Metz

233. Elementary Teaching in Mathematics and Science. (3) Three hours of lecture per week. Prerequisites: Admission to a credential program and consent of instructor. Three hours of seminar per week. Consent of instructor recommended as an introduction to cognitive processes; and social-cultural analyses of school practices. (F) Metz

240A. Language Study for Educators. (3) Three hours of lecture/discussion per week. This course is designed to provide secondary school teachers with a survey of the field of language study and the exploration of the implications of such study for teaching and learning. Among course topics are: the nature of language, the meanings of "grammar," the varieties of English, the development of language in the preschool and school years. This course will be required for all Ed.D. students and recommended as an introduction to the study of language that is relevant to the field of education. Students enrolled in this course are expected to collect narrative samples from naturally occurring interactions (video and audio-taped conversation, classroom interaction), written narrative texts, or other. (F) Baquedano-López

240B. Theoretical Issues in the Study of Literacy. (3) Three hours of seminar per week. Formerly 242. Students will review trends in literacy theory, and then will examine current theories of written language acquisition and skill development. The course will involve in-class research and analysis, and will examine current theories of written language acquisition and skill development. The course will involve in-class research and analysis, and will examine current theories of written language acquisition and skill development. The course will involve in-class research and analysis, and will examine current theories of written language acquisition and skill development. The course will involve in-class research and analysis, and will examine current theories of written language acquisition and skill development. The course will involve in-class research and analysis, and will examine current theories of written language acquisition and skill development. 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The course will involve in-class research and analysis, and will examine current theories of written language acquisition and skill development. The course will involve in-class research and analysis, and will examine current theories of written language acquisition and skill development.
24CD. Methods for Teaching English in the Secondary Schools. (3) Three hours of lecture per week. Prerequisites: Enrollment in CLAD/Single Subject English Credential Program and 244A. In the second semester of the methods course is designed to continue introducing the teaching of English, with a focus on strategies grounded in an understanding of theories of teaching and learning. Besides considering the English language curriculum as a second language (ESL) to K-12 students and adults. Traditional methods emphasizing the development of structural knowledge, and new methods focused on the development of students' skills, will be examined. Topics include teaching English through content instruction, “structured English immersion,” syllabus and curriculum design, second language reading, and language testing for placement and evaluation. (F, SP) Fillmore

245A. Approaches in Teaching English as a Second Language. (3) Three hours of lecture per week plus field work assignment. Prerequisites: Applied linguistic course or a course in second language acquisition. Formerly 243B. This course is primarily concerned with the teaching of English as a second language (ESL) to K-12 students and adults. Traditional methods emphasizing the development of structural knowledge, and new methods focused on the development of students' skills, will be examined. Topics include teaching English through content instruction, “structured English immersion,” syllabus and curriculum design, second language reading, and language testing for placement and evaluation. (F, SP) Fillmore

245B. Teaching Linguistic and Cultural Minority Students. (3) Three hours of lecture per week. Prerequisites: Two years of foreign language. Credit/no credit option: Students meeting special circumstances and approval of instructor are allowed to register for the course. This course focuses on students’ and teachers’ use of language from interrelated perspectives, particularly developmental, sociolinguistic, and ethnographic. Designed to provide a comprehensive framework for examining students’ use of language, considering whose aims are fostered or rendered problematic by the nature of language use. Students conduct small-scale studies in classroom settings. Baguena-López

250B. Second Language Acquisition: Concepts and Methodology. (3) Three hours of lecture per week. Formerly 253A. Psycholinguistic theory and research on the acquisition of second languages by learners at secondary and post-secondary institutions. How do adults learn languages other than their own in instructional settings? What skills can they transfer from their native languages, and literacy in L1 transfer to the way the L2 is used in its spoken and written forms? Exploration of various hypotheses and theories that consider language learning from a linguistic, cognitive and discourse perspective. Topics include: interlanguage hypothesis, input, transfer and variation in second language acquisition, interlanguage strategies, affect and cultural variable, schema theory, speech act and discourse theory, and cross-cultural pragmatics. Kramsch

250C. Discourse Analysis. (3) Three hours of seminar per week. Examination of the major linguistic, psycho- and sociolinguistic theories and concepts of discourse. Course and written texts in education. Topics include: coherence and cohesion, deixis, speech acts, genres, systemic properties of context and the use of language learning as embodied practice, language and subjectivity, pedagogy and symbolic control, language learning as mediated action and as the social and cultural construction of identity in written and oral discourse. Certification of voice, language learning memoirs as acts of identity, the politics of recognition, linguistic human rights. Kramsch

252A. Reading Research: Sociocognitive Perspective. (3) Course may be repeated for credit. Three hours of seminar per week. Formerly 291. An examination of the impact of reading research on reading instruction, word recognition, reading comprehension, the relationship between decoding and reading attitudes toward reading, and models of the reading process. Cunningham

252B. The Ethnography of Reading. (3) Three hours of seminar per week. This course approaches reading as a sociocultural activity and considers recent ethnographic work on reading practices in different educational settings, communities, and historical epochs. By considering how reading is differently conceived and realized in a wide range of contexts, this course will shed light on reading as a historically contingent, ideologically shaped, and socio-culturally organized practice. More specifically, this course has a twofold aim: 1) to introduce students to recent ethnographic research on reading practices; 2) to familiarize them with ethnographic methodologies. In addition to reading exemplary studies of reading practices, students will also conduct a small-scale ethnographic research project in settings of their choice. (F) Sterponi

253A. Research in Writing. (3) Course may be repeated for credit. Three hours of seminar per week. Formerly 292. Prerequisites: Consent of instructor. Formerly 252B. Critical examination of major theories and approaches to research in writing. Preparation for designing and conducting research projects on the written language. Freedman

255A. Issues in the Study of Bilingualism. (3) Three hours of lecture per week. Formerly 2554A. Working within a sociolinguistic framework, students will examine key issues in the study of bilingualism. Attention will be given to such areas as: definitions and typologies of bilingualism, the acquisition of bilingual ability, the description and measurement of bilingualism, and the nature of societal bilingualism. Much time is devoted to the theoretical questions and controversies surrounding bilingualism and education. Staff

257. The Student Athlete and Educational Institutions. (3) Three hours of lecture/discussion per week. Student athletes face a dilemma. They are expected to perform at the highest level in their field of play. The academic and the athletic domains of student athletes’ lives are often in conflict and they face the difficult task of resolving this conflict. This course examines the writing and research on student athletes from a sociocultural and educational perspective with a particular focus on the educational challenges student athletes face. Topics include theories of sport in society, the institutional relationship between sport and education, athletic and academic identities, self-regulated learning and studying, academic discourse, achievement motivation, coaches as teachers, the language of sport, and the role of race, class, and gender. Simons, Van Rheenen

258. Academic Support Services for Student Athletes. (3) Three hours of lecture per week. Formerly 258. The increased institutionalization and regulation of collegiate athletics have created a new and specialized career field composed of counselors, academic advisors, learning specialists, tutors, and technological and administrative support staff. This course will investigate the historical, philosophical, and ethical foundation of these services, focusing in particular on the analysis of teaching and tutorial program for student athletes. (SP) Simons

260A. Issues in Educational Administration and Policy. (3) Three hours of lecture per week. Required of all students in the Division of Educational Administration and Evaluation.) Concepts, theories, and issues in educational administration and policy are studied in the context of governmental policy for school systems. Fuller

261A. Organization Theory in Education and Other Social Services. (3) Three hours of lecture per week. Concepts of power, authority, legitimacy, professionalism, control, strategies, controls, incentives, etc., as they are applied to education or other social services. Fuller

262B. School Supervision: Theory and Practice. (3) Three hours of lecture per week. Concepts and practices associated with the analysis of and professional supervision of teachers in urban systems. The role of the urban school leader in supervising teachers. Tredway

262C. Personnel Administration in School Systems and Organizations. (3) Three hours of lecture per week. Concepts and practices related to the administration of personnel services in urban school systems and social organizations. Tredway

262D. Research Group on the Working Lives of Teachers. (3) Course may be repeated for credit. Three hours of lecture per week. Prerequisites: Consent of instructor. Research group for graduate students specializing in research on teachers’ work and organizational and policy contexts of teaching. Components but does not substitute for foundational coursework in research methodologies and areas of specialization. Strengthens preparation for research through (a) consultation and feedback on research design, data collection, analysis, and writing; and (b) reading and discussion on selected topics related to teachers’ work. Little

262E. Teachers’ Work and Contexts of Teaching. (3) Three hours of lecture/discussion per week. Formerly 262A. Introduction to sociological and socio-cultural research on teachers’ work and the occupational, organizational and policy contexts of teaching. Overview of research related to teachers’ work, followed by in-depth focus on one or two areas of theory development and empirical research, e.g., conceptions of teaching as a profession, teacher leadership and teacher learning, investigations of teachers’ communities of practice, conceptualizing and studying the school as workplace. (SP) Little

B prefix=language course for business majors
H prefix=honors course
R prefix=course satisfies R&U requirement
A prefix=suffices for first course satisfies American Cultures requirement

*Professor of the Graduate School
†Recipient of Distinguished Teaching Award
262F. Organizational Policy and Teachers’ Work. (3) Three hours of lecture per week. Students will examine the ways in which state, district, and workplace policies impact the roles of teachers. Special emphasis is given to the way in which policy choices— at whatever level—shape the experience of teaching and the organization of schooling. Among the policy areas examined is the role of administrators in the teaching occupation, teaching assignments, classroom autonomy regarding curriculum and instruction, performance evaluation, and opportunities for professional development. This course is a requirement for students in educational administration and those students completing the Professional Administration Services Credential. It is open to all other interested students. Little

263A. Legal Issues in Educational Practice. (1-3) Two hours of lecture per week. Legal structures and practices in Education for teachers and counselors. Teacher, pupil, counselor rights and responsibilities. Staff

263B. Legal and Policy Issues in Urban Educational Leadership. (3) Three hours of lecture per week. Prerequisites: Admission to the Principal Leadership Institute Program. This course will explore the statutory and judicial constraints upon local decision-making as well as the areas in which site decision making is permitted and required. (SP) Staff

265A. Economics of Education and Other Social Services. (3) Three hours of lecture and one hour of discussion per week. Topics to be considered include the following: alternative methods of assessing the contribution of education to economic growth, demand for education services, education production functions, cost analysis and structural change, economic aspects of innovation. Grubb, Stern

266A. Educational Resources and Finance. (3) Three hours of lecture per week. This course covers the resources necessary for education; financing from local, state, federal, and private sources; the effects of funding policies on teaching and student learning; and the relationship of school finance to issues of race and class as frames for understanding educational reform. Wilson

269A. Urban School Reform. (3) Three hours of lecture per week. American debates about effectiveness and equity and public interest in school reform focuses on city schools, and the commitment to reform is a current theme in public discussions of education. At the same time, reformers often charge that urban schools are highly unequal and that the history of race and poverty and the difficulties in institutionalizing progressive practices in schools. Perlstein

270B. BEAR Center Seminar. (2,3) Course may be repeated for credit. Two hours of seminar and one hour of discussion per week. This seminar includes one of the ways in which the Berkeley Evaluation and Assessment Research Center (BEAR) Center fulfills its role of supporting student research. The topic of the seminar will change from semester to semester, following themes chosen by the instructor and the participants. The seminar is an opportunity for students and faculty to present their current and ongoing work for in-depth review and commentary. In addition, visitors to the campus with expertise relevant to the topic(s) under examination will be invited to present at the seminar and join in the discussion. Students taking this course for two units will make a presentation of a current research interest to the seminar. Students taking this course for three units will also be required to attend one one-hour discussion following each presentation and will write a critique of one other student’s presentation. Wilson

271B. Introduction to Qualitative Research Methods. (3) Three hours of lecture/discussion per week. Formerly Education 268B. In this course, we will introduce students to qualitative methods used to answer research questions designed to reveal student thinking, and capture students’ capacities to contribute to “good” work” valued by communities outside the classroom. Students will gain understandings of the purposes and characteristics of performance assessment, conceptual frameworks, assessment practices at multiple levels, role in school reform, and policy issues. Offered alternate years. Gearhart

272B. School Data Analysis for Principals. (1) Course may be repeated for a maximum of 3 units. One hour of lecture per week. Prerequisites: 271F. This course is intended to prepare school principals to conduct data-based inquiry for the purpose of guiding their decision making and planning for school improvement. Extensive practice will be provided so that students will be able to analyze actual school data. The course will review basic techniques of descriptive statistics, concepts of statistical inference, and methods for assessing student performance. Practical attention will be given to tests and assessments used in California. (F,SP) Saroyan, Stern

274A. Measurement in Education and the Social Sciences I. (4) Four hours of lecture per week. Formerly Educational Psychology 208A. Students will learn good measurement practice by constructing an instrument and investigating its measurement properties, including validity and reliability. The act of measuring will be positioned as a link between qualitative observations and quantitative measures, and this will be discussed in a variety of contexts, such as intervention evaluation, item response theory, and personnel assessment. We will discuss classical and modern testing approaches from conceptual and practical points of view. Wilson

274B. Measurement in Education and the Social Sciences II. (4) Four hours of lecture per week. Prerequisites: 274A or sufficient background to follow the mathematical development. Formerly Educational Psychology 208B. An introduction to classical test theory and item response theory from a theoretical viewpoint. Application of these techniques to a practical measurement situation will be studied. Topics such as test bias, computerized and polytomous response models will be discussed. Wilson

274C. Research Seminar in Measurement. (4) Course may be repeated for credit. Four hours of seminar per week. Prerequisites: 274A or equivalent. Formerly Educational Psychology 208C. The seminar will add current research findings in the area of educational and psychological measurement. Topics will vary from year to year. Some examples are polytomous item response theory, measurement of cognitive processes and learning, and assessment issues in evaluation. Wilson

274D. Multidimensional Measurement. (4) Four hours of lecture per week. Formerly Educational Psychology 208D. Exploratory factor analysis, confirmatory factor analysis, and multidimensional item response theory. Wilson

274F. New Forms of Student Assessment: Characteristics and Roles in School Reform. (2-4) Two hours of lecture/discussion and one hour presentations per week. This survey course provides background on reforms in assessment in K-12 education. The course is focused on “performance assessment” and “formative assessment designed to reveal student thinking and capture students’ capacities to contribute to ‘good’ work” valued by communities outside the classroom. Students will gain understandings of the purposes and characteristics of performance assessment, conceptual frameworks, assessment practices at multiple levels, role in school reform, and policy issues. Offered alternate years. Gearhart

275B. Data Analysis in Educational Research II. (4) Four hours of lecture per week. Prerequisites: 293A and 293B or equivalent, or consent of instructor. Formerly Educational Psychology 209B. A second course in educational statistics and data analysis. Emphasis is on using and interpreting multiple regression/loglinear models, assessing significance for a variety of data sets and with a variety of analytic objectives. Must be taken concurrently with the computer laboratory Education 275L. Staff

275F. Research Seminar in Data Analysis. (3) Course may be repeated for credit. Three hours of lecture per week. The seminar addresses a current research issue in the area of educational data analysis. Topic will vary from year to year. Some examples are: multilevel modeling, quasi-experimental research design, and meta-analysis. (F,SP) Staff

275G. Hierarchical and Longitudinal Modeling. (3) Two hours of lecture and two hours of laboratory per week. Prerequisites: Linear regression, 275F or equivalent. The course introduces hierarchical linear and generalized linear models for longitudinal or clustered data. Such models are important in education research where longitudinal development such as learning is of interest and where students are clustered in classes or schools. Other examples of clustering are people nested in neighborhoods, hospitals, or families. Students will practice formulating and estimating hierarchical models using either educational data sets provided or their own data sets. (F,SP) Rabes-Hesketh
275L. Educational Data Analysis Laboratory II. (1) Two hours of laboratory per week. Prerequisites: 293A and 293L recommended or equivalent. Formerly 208L. Students must SYSTAT to do statistical projects and advanced data analysis projects using a variety of educational data sets in conjunction with 275B. Assumes basic familiarity with the statistical program SYSTAT. Must be taken concurrently with 275B. Staff

276A. Models and Methods of Evaluation. (3) Three hour seminar per week. Formerly 280B. This course serves as an introduction to the field of educational evaluation. Using different evaluation contexts as an organizational structure, this course addresses various and practical evaluation questions emphasizing programmatic issues that emerge in different contexts, and analyzes the application of theory and methods in examples of actual evaluations conducted (or in progress) within each defined context. The course will provide hands-on experience in the planning and design of evaluations in different contexts and will serve as a foundation for the study and application of advanced evaluation methodology in subsequent seminars and apprenticeship experience. Hofstetter

276C. Practicum in Evaluation. (2-4) Course may be repeated for credit. Two hours of seminar biweekly, alternating with four-hour laboratories. Prerequisites: 293A, 293L. Formerly 283F. For students involved in an evaluation project not requiring a research proposal as graduate students or post-doctoral researchers or part of a practicum or apprenticeship experience. The purpose of this course is to integrate practical experiences with evaluation theory and research and to prepare students to specific evaluation questions or methods. Also provides additional instructional support to students using project data in courses, position papers, dissertations. Readings relate to evaluation topics, including evaluation of professional development programs, use of student data to evaluate teaching and discussions focus on design, methodology, and research questions of specific projects being conducted by the students. Staff

276D. Evaluation Theory. (3) Three hours of lecture per week. Prerequisites: 276A. This course covers the basic stages of and strategies for conducting program evaluations within selected evaluative frameworks, such as cost-benefit analysis, utilization-focused evaluation and theory-based evaluation. Students will develop their own evaluation studies, identify questions, develop instruments, collect data, and write/present an evaluation report. Hofstetter

276E. Evaluation Procedures. (3) Three hours of lecture per week. Prerequisites: 276A. This course covers the basic stages of and strategies for conducting program evaluations within selected evaluative frameworks, such as cost-benefit analysis, utilization-focused evaluation and theory-based evaluation. Students will develop their own evaluation studies, identify questions, develop instruments, collect data, and write/present an evaluation report. Hofstetter

279A. Financing Public Education: Budgeting 1. (3) Three hours of lecture/discussion per week. Prerequisites: 297A or consent of instructor. This course examines management tools and financial methods of effective leadership of school districts in California. The course will present strategies from both business and educational perspectives and will challenge conventional financial management practices in California school systems. Specific areas of emphasis will be on maximizing the effectiveness of educational resources (e.g., financial analyses, budget techniques, cost analyses, management information systems), understanding the constraints that influence public school expenditures (e.g., state and national legislation), and accommodating the educational objectives of the school system through financial application (cost analysis and project management techniques). The underlying assumption of the course is that informed financial leadership can improve achievement and support the development and sustenance of a community of engaged scholars. Discussion of special topics as relevant. (F,SP) Seyer-Ochi

279B. Financing Public Education: Budgeting 2. (3) Three hours of lecture/discussion per week. Prerequisites: 297A and good standing in the Joint Doctoral Program or consent of instructor. This course examines management tools and financial methods of effective leadership of school districts in California. Specific areas of emphasis will be on maximizing the effectiveness of educational resources (e.g., financial analyses, budget techniques, cost analyses, management information systems), understanding the constraints that influence public school expenditures (e.g., state and national legislation), and accommodating the educational objectives of the school system through financial application (cost analysis and project management techniques). The underlying assumption of the course is that informed financial leadership can improve achievement and support the development and sustenance of a community of engaged scholars. Discussion of special topics as relevant. (F,SP) Seyer-Ochi

280A-280B. Proseminar: Sociocultural Critique of Education. (3,3) Three hours of seminar per week. Prerequisites: Consent of instructor. These interdisciplinarily oriented seminars, seminars for the spring semester, will explore what ways can philosophical, sociological, anthropological, historical, and psychological forms of inquiry be brought together to bear on the analysis of learning, on how the learning process takes place, and on how this process more generally? What do we mean by critical and interpretive theories, and what are their relations with social practice? How can education come to constitute itself otherwise than in its current form? Staff

280C. Research Apprenticeship and Qualitative Methodology Seminar I. (3) Three hours of seminar per week. Prerequisites: 280A or consent of instructor. The emphasis in this course is on the practice of research. Each student, ordinarily in the second year of graduate study, develops a research project with a faculty mentor and carries it out under direction. At the same time, students work together in this seminar. Short written assignments during the first eight weeks should be finished by the end of the semester. Students spend about 50 hours on the field research. Lave, Shaiken, Stack

280D. Research Apprenticeship and Qualitative Methodology Seminar II. (3) Three hours of seminar per week. Prerequisites: 280C or consent of instructor. This is the third seminar in the United States, focusing on the broader social, economic, political, and intellectual development and change across urban landscapes and within their myriad contexts (e.g., schools, families, neighborhoods, community organizations, and peer groups). Strengthens preparation for research and action through consultation on all stages of the research process and prepares students for development and sustenance of a community of engaged scholars. Discussion of special topics as relevant. (F,SP) Seyer-Ochi

283F. Urban Education. (3) Three hours of seminar per week. This course will explore the relationship between macroeconomic and political trends and public education. Students will become a member of a community of students and educators who examine and understand the larger societal phenomena upon which drop-out rates, school climate, teacher morale, and academic achievement will be investigated through a combination of reading and research in Oakland and Berkeley schools. An examination and evaluation of current proposals for reform of urban schools will also be included. (F,SP) Seyer-Ochi, Staff

284A. Philosophy of Education. (3) Three hours of lecture per week. Philosophical analysis applied to current educational problems and key concepts. (F,SP) Tredway

285. Globalization and International Education. (3) Three hours of seminar per week. What is globalization? What are the implications of living in a “global world” for educational systems? In this course, we explore these questions by examining various theoretical perspectives on globalization. We will then discuss several major developments associated with globalization that are affecting different levels of education. These primary topics include the role of the rise in accountability and testing, skills for the “knowledge economy,” and immigration. We will consider the role of international organizations such as the World Bank and the International Monetary Fund in the development of national policies and programs. We will also examine the role that the state, local communities, and non-governmental agencies play in providing and improving the quality of education. In the final part of the course, we will examine topics such as education in Asia, Africa, Latin America, and the United States to provide specific examples of how global forces are changing the context and content of education internationally. (SP) Murphy-Graham

289. Comprehensive Health Education for Teachers. (1) Three hours of lecture for five weeks. Prerequisites: For students admitted to teacher education programs only. This course addresses comprehensive school health education, including content areas of health instruction in the California Health Framework System, including K-12, a number of avoidable diseases, drug use and abuse, physical fitness, and community health services. For elementary teachers, the focus is on their responsibilities as primary health instructors. For secondary teachers, the focus is on their responsibilities as health teachers. Staff

290. Special Topics Seminars. Course may be repeated for credit. One hour of seminar per week. Prerequisites: Consent of instructor. Topics to vary from semester to semester. (1-4) (F,SP) Staff

290B. Education in Language, Literacy, and Culture. (1-4) Staff

290C. Cognition and Development. (1-4) Staff

290D. Special Topic Seminar. (1-4) Staff

291A. The Educational System of the United States I. (3) Three hours of lecture per week and one hour of discussion per week. Prerequisites: Graduate standing. Historical development and contemporary status of principal features of American schooling and major issues of policy and practice. The course is directed toward students interested in secondary schools. The course will stress relationships between education and other sectors of society. Grubb
Introduces students to quantitative research. This course will cover (a) basic skills in using computer programs are presented and discussed. Staff

Consultation and analysis for teaching programming. This course engages masters in a Berkeley teaching credential program. This course is designed for students in the Developmental Teacher Education Program and for their cooperating teachers. It combines techniques in a specific arts genre with application to an area of the California Academic Content Standards. Students will generate plans and materials to teach lessons that use the arts to deepen conceptual understanding in one of the content areas. An Education instructor will teach and serve as instructor of record in collaboration with visiting artists. (F,SP) Peretti

Community-Based Internship in School Psychology. (3;3) Course may be repeated for credit. Two hours of lecture/discussion and one day of fieldwork per week. Supervised assignment to a community mental health agency in the capacity of school psychologist. Singh

School-Based Internship in School Psychology. (3;3) Course may be repeated for credit. Two hours of lecture and three days of fieldwork per week. Supervised assignment to a school district in capacity of school psychologist. Staff

Consultation for School Psychology Students. (1) Course may be repeated for credit. One hour consultation on campus and six hours of fieldwork per week. must be taken on a satisfactory/unsatisfactory basis. Prerequisites: Admission to Advanced Reading-Language Leadership Program. Individual meetings with the instructor include the discussion and development of the master’s project (Plan II) in coordinated with a Senate faculty member. Field application of theoretical knowledge includes the supervised implementation and evaluation of reading language programs in the classroom. May field visits to exemplary reading/language programs in the Bay Area to be arranged with instructor. McCaulum

Practicum in School Site Management I. (3) Three hours of lecture and fieldwork per week. must be taken on a satisfactory/unsatisfactory basis. Prerequisites: Admission to Administrative Services Credential Program. Supervised field experience, conferences, and colloquium. Staff

Practicum in School Site Management II. (2) Course may be repeated for credit. Three to six hours of fieldwork per week. must be taken on a satisfactory/unsatisfactory basis. Prerequisites: 460B. Supervised field experience, conferences, and colloquium. (SP) Contracts

Research Practicum in Administration. (2) Course may be repeated for credit. Ten hours of fieldwork per week. must be taken on a satisfactory/unsatisfactory basis. Prerequisites: Ad- mission to credential program. Formerly Education in Mathematics, Science, and Technology 390. Fieldwork in a field setting. May begin with the opening of the public schools in the fall and extend through the spring semester. Zimmerman

Technology, Curriculum, and Instruction I. (1) One hour of seminar and two hours of laboratory per week. must be taken on a satisfactory/unsatisfactory basis. Prerequisites: Admission to the Developmental Teacher Education Program. Formerly Education in Mathematics, Science, and Technology 289. Advanced group study in research. Topics vary from semester to semester. May consist of organized lectures or seminar discussions, related chiefly to the research area in which the group is working. (F,SP) Staff

Group Studies for Graduate Students—LLSC. (1-3) One to four hours of lecture/seminar per week. Formerly Education in Mathematics, Science, and Technology 298. Group study and research on special problems and topics not covered by courses or seminars. (F,SP) Staff

Special Study and Research. (1-12) Course may be repeated for credit. Individual conference and independent study. Must be taken on a satisfactory/unsatisfactory basis. Prerequisites: Consent of instructor. Special study or research under direction of a faculty member. One unit of credit for every four hours of conference and independent research per week. Staff

Group Study for Doctoral Students. (1-8) Course may be repeated for a maximum of 16 units. Course does not satisfy unit or residence requirements for master’s degree. Must be taken on a satisfactory/unsatisfactory basis. Prerequisites: Consent of instructor. Individual study for the master’s examination in consultation with a faculty advisor. One unit of credit for each four hours of conference and independent research per week. Staff

Individual Study for Master’s Students. (1-6) Course may be repeated for a maximum of 16 units. Course does not satisfy unit or residence requirements for master’s degree. Must be taken on a satisfactory/unsatisfactory basis. Prerequisites: Consent of instructor. Individual study in preparation for the doctoral qualifying examination. must be completed before each four hours of conference and independent research per week. Staff

Professional Courses

Teaching Assistants Practicum. (1-6) Course may be repeated for credit. One half-hour, one course, one three-hour discussion and one hour field work per unit per week. Must be taken on a satisfactory/unsatisfactory basis. Consultation and analysis for teaching assistants. Staff

Supervised Teaching for Secondary School Students. (2-5) Course may be repeated for credit. Two hours of seminar and six hours of fieldwork per week. must be taken on a satisfactory/unsatisfactory basis. Prerequisites: Admission to teacher education program. Formerly Education in Mathematics, Science, and Technology 298B. Technology, Curriculum, and Instruction II. (1) One hour of seminar and two hours of laboratory per week. must be taken on a satisfactory/unsatisfactory basis. Prerequisites: Admission to the Developmental Teacher Education Program and for their cooperating teachers. It combines techniques in a specific arts genre with application to an area of the California Academic Content Standards. Students will generate plans and materials to teach lessons that use the arts to deepen conceptual understanding in one of the content areas. An Education instructor will teach and serve as instructor of record in collaboration with visiting artists. (F,SP) Peretti

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School-Based Internship in School Psychology. (3;3) Course may be repeated for credit. Two hours of lecture and three days of fieldwork per week. Supervised assignment to a school district in capacity of school psychologist. Staff

Consultation for School Psychology Students. (1) Course may be repeated for credit. One hour consultation on campus and six hours of fieldwork per week. must be taken on a satisfactory/unsatisfactory basis. Prerequisites: Admission to Advanced Reading-Language Leadership Program. Individual meetings with the instructor include the discussion and development of the master’s project (Plan II) in coordination with a Senate faculty member. Field application of theoretical knowledge includes the supervised implementation and evaluation of reading language programs in the classroom. May field visits to exemplary reading/language programs in the Bay Area to be arranged with instructor. McCaulum

Practicum in School Site Management I. (3) Three hours of lecture and fieldwork per week. must be taken on a satisfactory/unsatisfactory basis. Prerequisites: Admission to Administrative Services Credential Program. Supervised field experience, conferences, and colloquium. Staff

Practicum in School Site Management II. (2) Course may be repeated for credit. Three to six hours of fieldwork per week. must be taken on a satisfactory/unsatisfactory basis. Prerequisites: 460B. Supervised field experience, conferences, and colloquium. (SP) Contracts

Research Practicum in Administration. (2) One hour of lecture and three hours of fieldwork per week. must be taken on a satisfactory/unsatisfactory basis. Prerequisites: 294A and admission to the Principal Leadership Institute. This course engages mas-
460L. Field-Based Practicum: Internship in Educational Administration I-IV. (2) Six hours of field work per week and one three-hour seminar will be scheduled during each semester. Prerequisites: Possession of Preliminary Administrative Services Credential. Supervised field based practicum and seminar for students admitted to the Preliminary Administrative Services Credential. Administrative skills addressed in the course include developing community support, contract management, and written and verbal communication skills. Staff.

470A. Residency in Systemic Educational Reform. (3) Course may be repeated for credit. One hour of seminar per week, plus six hours of residency in a local school district and two hours of individual research preparation for a case study. Prerequisites: 277A and good standing in the Joint Doctoral Program. (F,SP)

470B. Residency in Curriculum, Instruction, Assessment, and Professional Development. (3) Course may be repeated for credit. One hour of seminar per week, plus six hours of residency in a local school district and two hours of individual research preparation. Prerequisites: 290E and good standing in the Joint Doctoral Program. Students will meet weekly for one hour with a residency adviser at one of the following campuses: San Francisco State University; California State University, East Bay; or San Jose State University. The residency will require six hours weekly at a school district site to conduct research on curricular, instructional, and professional development topics selected by students in conjunction with their faculty counselors and residency advisers in collaboration with the district consultant. An additional two hours weekly will be dedicated to preparation of case study materials from the residency assignment. Students will be expected to present the results of their residency research to the faculty and students of the Joint Doctoral Program. (F,SP) Lambert

470C. Residency in Budget. (3) Course may be repeated for credit. One hour of seminar per week, plus six hours of residency in a local school district and two hours of individual research preparation. Prerequisites: 290E and good standing in the Joint Doctoral Program. Students will meet weekly for one hour with a residency adviser at one of the following campuses: San Francisco State University; California State University, East Bay; or San Jose State University. The residency will require six hours weekly at a school district site to conduct research on curricular, instructional, and professional development topics selected by students in conjunction with their faculty counselors and residency advisers in collaboration with the district consultant. An additional two hours weekly will be dedicated to preparation of case study materials from the residency assignment. Students will be expected to present the results of their residency research to the faculty and students of the Joint Doctoral Program. (F,SP) Lambert

470D. Advanced Residency in Educational Leadership. (3) Course may be repeated for credit. One hour of seminar per week, plus six hours of residency in a local school district and two hours of individual research preparation. Prerequisites: 470A-470B-470C and good standing in the Joint Doctoral Program. Students will meet weekly for one hour with a residency adviser at one of the following campuses: San Francisco State University; California State University, East Bay; or San Jose State University. The residency will require six hours weekly at a school district site to expand their research on systemic educational reform; curriculum, instructional, and professional development; and budgeting, resource allocation, and financial operations. The specific topics will be selected by the students in conjunction with their faculty counselors and residency adviser in collaboration with the district consultant. An additional two hours weekly will be dedicated to preparation of case study materials from the residency assignment. Students will be expected to present the results of their residency research to the faculty and students of the Joint Doctoral Program. (F,SP) Lambert

Electrical Engineering and Computer Sciences (College of Engineering)

Department Office: 205 Cory Hall #1770, (510) 642-3068

Chair: Edward A. Lee, Ph.D.
Associate Chair: Stuart Russell, Ph.D.
Assistant Professor: Benoit V. C. Vaxelaire, Ph.D.

Prerequisites: 290E and good standing in the Joint Doctoral Program.

Chair: Email: edleeb@eecs.berkeley.edu Telephone: (510) 642-5136

University Professor

John R. Whinnery (Emeritus), Ph.D. University of California, Berkeley. Communications applications of lasers

Professors

Venkatachalam Anantharam, Ph.D. University of California, Berkeley. Systems and control

Charles K. Birdall, Ph.D. Stanford University. Plasma science, and The Robert S. Pepper Distinguished Professor (Emeritus), Ph.D. Stanford University, Nanodevices

Bennett E. Price, Ph.D. Stanford University. Integrated circuits, neural networks

Robert K. Brayton, Ph.D. (The Cadence Design Systems Distinguished Professor in Engineering), Ph.D. Massachusetts Institute of Technology. Computer-aided design

Constance Chang-Hasnain, Ph.D. (The William S. Floyd Jr. Professor of Technology, Digital signal processing, and Computer Sciences (Engineering) and Systems and control), Ph.D. University of California, Berkeley. Optical communications applications of lasers

Tsu-Jae King Liu, Ph.D. Stanford University. Semiconductor materials and development

Kam Y. Lau, Ph.D. (The Conexant Systems Professor in Electrical Engineering), Ph.D. Stanford University. Communications applications of lasers

Kannan Ramchandran, Ph.D. Carnegie-Mellon University. Bit error rate and system design

Babak Akyeoz, Ph.D. (Adjunct)

Affiliated Professors

David Atwood, Ph.D. (Emeritus), Ph.D. University of California, Berkeley. Information theory, signal processing, and machine learning

Otto J.M. Smith, Ph.D. Stanford University. Computational science, and signal processing

Aram J. Thomasian, Ph.D. (The Nortel Networks Distinguished Professor), Ph.D. California Institute of Technology. Nanotechnology, circuits and systems, and signal processing

Michael Gashper, Ph.D. (Emeritus), Ph.D. University of California, Berkeley. Information theory, signal processing, and machine learning

Venkatesh Saligrama, Ph.D. University of California, San Diego. Information theory, signal processing, and machine learning

Donghoon Jeong, Ph.D. University of California, San Diego. Information theory, signal processing, and machine learning

Costas Spanos (Associate Dean, Research and Director, Engineering Research Support Organization), Ph.D. Carnegie-Mellon University. Integrated manufacturing of integrated circuits

Norman Chang, Ph.D. University of California, San Diego. Microelectromechanical systems

David Tse, Ph.D. Massachusetts Institute of Technology. Networking

Theodore Van Duzer, Ph.D. University of California, Berkeley. Communication networks

Jean Walrand, Ph.D. University of California, Berkeley. Communication networks

William J. Welch, Ph.D. University of California, Berkeley. Radioastronomy

Richard M. White, Ph.D. Harvard University. Microelectronics and ultrasonics

Ming-Chiang Wu, Ph.D. University of California, Berkeley. Optoelectronics and nanophotonics

Aviv Inbar, Ph.D. University of California, Berkeley. Computer-aided design and its applications

V. Rajalakshmi, Ph.D. (Emeritus), Ph.D. University of California, Berkeley. Robotics, embedded systems, biological computation

Peter Bartlett, Ph.D. (Adjunct)

Statistical learning theory

Electrical Engineering and Computer Sciences / 231
Associate Professor
Marti Hearst, Ph.D., University of California, Berkeley. (School of Information)

Senior Lecturers
Michael J. Clancy, B.S.
Hilton Harvey, Ph.D.

Lecturer
Dan Garcia, Ph.D.

Department Overview

Berkeley's Department of Electrical Engineering and Computer Sciences (EECS) offers one of the strongest research and instructional programs in this field anywhere in the world. Our key strength is in cross-disciplinary team-driven projects. The integration of electrical engineering (EE) and computer science (CS) forms the core, with strong interactions that extend into biological sciences, mechanical and civil engineering, physical sciences, chemistry, mathematics, and operations research. Our programs have been consistently ranked in the top three nationwide and worldwide by various organizations that rank academic programs.

Each year, top students from all parts of the world are attracted to Berkeley by the excellence of the faculty, the breadth of educational opportunities in EECS and campus-wide, the proximity to the vibrant California high-tech economy, and the Berkeley environment. The department's close ties to industry, coupled to its commitment to engineering research and education, ensure that students get a rigorous, relevant, and broad education.

Faculty members at Berkeley are committed to research and discovery at the highest level, informed and creative teaching, and the creative desire to excel. The EECS faculty has been recognized in a long list of prestigious honors and awards, including 2 National Medals of Science, 3 ACM Turing Awards, 3 IEEE Medals of Honor, 36 members of the National Academy of Engineering, 7 members of the National Academy of Sciences, 14 fellows of the American Academy of Arts and Sciences, etc.

Unlike many institutions of similar stature, regular faculty teaches the vast majority of our courses, and the most exceptional teachers are often the most exceptional researchers. The department's list of active teaching faculty includes 7 winners of the prestigious Berkeley Campus Distinguished Teaching Award.

The mission of the EECS Department has three parts:

1. (educating future leaders in academia, government, industry, and entrepreneurial pursuits, through a rigorous curriculum of theory and application that develops the ability to solve problems, individually and in teams;
2. (creating knowledge of fundamental principles and innovative technologies, through research within the core areas of EECS and in collaboration with other disciplines, that is distinguished by its impact on academia, industry, and society; and
3. (serving the communities to which we belong, at local, national, and international levels, with a deep awareness of our ethical responsibilities to our profession and to society.

Our strategy to accomplish this mission is: recruit and retain the very best faculty, students, and staff, and then empower them to direct and drive the creation and dissemination of knowledge. We know that we have succeeded if this mission, when our students succeed, becoming leaders and serving society.

Electrical Engineering began on the Berkeley campus more than a century ago, with the hiring of the first electrical engineer, Clarence Cory, into the College of Mechanic. The early days focused on electric power production and distribution, and Cory's laboratory, in fact, powered the first light and power to the entire campus.

The evolution since then has been dramatic, accelerating rapidly in the latter half of the 20th century. The development of our world-class computer science faculty followed naturally from the synergies between electrical systems, theory, and computing. In the 21st century, EECS has become a broader field, defined more by its intellectual approach to engineering problems than by particular technical solutions. Broadly, EECS harnesses computing processes to perform logical functions, and hence easily extends beyond its core technology base in electronics to, for example, biological systems.

Current strengths in biosystems and computational biology, nanotechnology, artificial intelligence, concurrent and distributed systems, embedded systems, novel devices (such as organic semiconductors), robotics, advanced networking, computer security and trusted computing, energy, and sensor networks, complement beautifully our traditional strengths in physical electronics, integrated circuits, operating systems and networking, graphics and human-computer interaction, communications systems and computer architecture, parallel processing, the theory of computing, programming languages, scientific computing, electronic design automation, power systems, and database management systems. Many of our current research areas are focused on enormous societal challenges and opportunities such as energy efficiency, network intelligence, transportation systems, security, and health care. More than any other engineering discipline, EECS bridges the physical world and the semantic one, creating technologies to serve humanity.

Organizationally, the EECS Department smoothly integrates our world-class faculty with dedicated staff and extremely active and involved student groups. Our undergraduate programs recognize the daunting intellectual breadth of the field by offering a great deal of flexibility. These programs are accredited by ABET, Inc., the Accreditation Board for Engineering and Technology (111 Market Place, Suite 1050, Baltimore, MD 21202-4012: 410-347-7700) and by the CAC, the Computing Accreditation Commission of ABET, Inc.

Our graduate programs emphasize research, preparing students for leadership positions in industrial labs, government, or academia. Our laboratory computing facilities are among the best anywhere, and have conceived many transformative inventions. Our research programs are well funded, and nearly all of our graduate students receive full financial support.

Undergraduate Programs Leading to the Bachelor of Science Degree

Under the auspices of the College of Engineering, EECS offers two undergraduate programs: Electrical and Computer Engineering (ECE) and Computer Science and Engineering (CSE). The CSE program puts a greater emphasis on computer science, whereas the ECE program puts a greater emphasis on electrical engineering. Both programs include a core of required courses in EECS (EE 20N, EE40, CS 61A, CS 61B, and CS61C) and nearly the same math and science courses. After satisfying program requirements, the lowest-division students have the option to choose from a variety of elective upper-division courses. To guide students into a coherent choice of courses, we ask students to choose from one of five “option sets.” The choice of an option set assigns a faculty advisor, and the options provide sample programs that suggest reasonable tracks.
The options are:

- **Physical Electronics (Option 1)** is for students interested in integrated circuits, electronic devices, nanotechnology, electromagnetics, and nano fabrication, photonics and optoelectronics, microelectromechanical systems (MEMS), electronic design automation (EDA), high power circuits, and applications to biomedicine, micro-robotics, sensors, actuators, energy production, storage, and conservation, and silicon structures.

- **Communication, Networks, and Systems (Option II)** is for students interested in networks, control systems, digital and analog communications, information theory, signal processing, and systems modeling, design, verification, and optimization, together with applications to robotics, biomedicine, wireless communications systems, multimedia systems, multi-sensor fusion, and machine intelligence.

- **Computer Systems (Option III)** is for students interested in machine architecture and logic design, communication networks, computer security, operating systems, database systems, programming systems and languages, embedded software, and/or digital devices and circuits, together with applications to networked computing, embedded systems, computer graphics, and information systems.

- **Computer Science (Option IV)** is for students interested in the foundations of computing, which includes the theory of computation, the design and analysis of algorithms, complexity theory, the architecture and logic design of computers, programming languages, compilers, operating systems, scientific computation, computer graphics, database systems, artificial intelligence and natural language processing, and cryptography and computer security.

- **General Course of Study (Option V)** enables students whose interests are broad or who have yet to focus on a specific field to explore several topics in the areas mentioned above.

Students in the ECE program typically select options I, II, III, or V, whereas students in the CSE program select options III or IV. Students are not obliged to follow any of these options precisely, but are free to plan an individual program to suit their special needs or interests, subject to meeting the requirements detailed below.

### Requirements

The EECS undergraduate program is designed for students interested in integrated circuits, as taught in EECS. Students selecting this option must take at least five core lower-division courses, as taught in EECS. Students selecting this joint major have two faculty advisors, one from each major.

#### EECS/Nuclear Engineering

EECS/Nuclear Engineering combines the traditional EE program with that in Nuclear Engineering, both of which share a concern for electrical power generation, automatic control, computer sciences, and plasmas. Students selecting this joint major have two faculty advisors, one from each major.

### Computer Science Leading to the Bachelor of Arts Degree

In addition to a CS major through the College of Engineering, which confers the B.S. degree, the Computer Science Division also offers the major through the College of Letters and Science, which confers the B.A. degree. An essential difference between the two majors is that the EECS program requires a greater number of math and science courses than the CS program, which requires a greater number of non-technical, or breadth, courses. The Computer Science major under L&S auspices is not accredited.

For further information about L&S computer science programs and requirements, see the booklet, The CS Major and Minor, which is available from the Computer Science Advising Office in 377 Soda Hall. Useful information can also be found at this web site: www.eecs.berkeley.edu/Peer/resources/cs_handbook.html.

Details about the computer science major offered through the College of Letters and Science may also be found under the course listings for Computer Science in the General Catalog.

### Computing Service Courses

Students may earn a total of at least 5 units of credit toward graduation for courses labeled as “computing service” courses, which include CS 3, the CS 9 series, and IDS 110. Students may receive a maximum of 10 units of credit for each computing science course taken after the first or after any of the CS 61 courses. Any units beyond these limits will not count toward graduation, although they will count for the sole purpose of determining whether the study list falls within the minimum and maximum unit loads.

### Course Materials Fee

The Department of Electrical Engineering and Computer Sciences charges a course materials fee for Electrical Engineering 143. The amount of the fee is listed in the online Schedule of Classes.

### Advanced Degree Programs

The Five-Year Bachelor’s/Master’s Program in EECS (B.A./M.S. or B.S./M.S.)

The combined Bachelor’s/Master’s program is designed to take outstanding EECS and CSE undergraduates immediately into an intensive two-semester program conferring the Master of Science degree. This combined program promotes interdisciplinary focus and is best suited to those
who are more "professionally oriented" as opposed to those wishing to pursue a more traditional research-based and discipline-specialized advanced course of study. Among the distinguishing features of this five-year program is its emphasis upon extended study in interdisciplinary, though allied, technical fields such as physics, biology, and statistics, or in the sciences such as federal law, or public policy. The program is aptly entitled, "Educating Leaders for the Emerging Global Economy," and reflects a growing need for those who are technically skilled and who also possess an understanding of law, economics, and social context of technology development and use.

Conversal of the degree requires either writing a thesis (Plan I) or reporting on a project (Plan II), as is required of our other Master's students.

The EECS Graduate Program

The EECS Graduate Program offers a comprehensive program geared toward research and teaching (Master of Science and Doctor of Philosophy), and for careers in design, development, and management (Master of Engineering and Doctor of Engineering). The Master of Science program requires three to four semesters of study, while the Doctor of Philosophy program is normally completed in five years. The Master of Engineering program requires four semesters of study and includes a minor in a technical subject outside the major and a second minor in a nontechnical subject such as administration or business, like. The Doctor of Engineering program, of about two years duration, builds on the coursework for the Master of Engineering and requires a one-year internship in a design and development organization. Students with either a B.S. or M.S. who intend to study for the Ph.D. should apply for the M.S. Program. Admission into the graduate program is competitive, and in a given year, admitted students have a wide variety of cluster areas from which to choose an affiliation, and a large number of courses and seminars taught by leaders in the department, the boundaries between the divisions. Students apply to either the Electrical Engineering Division or to the Computer Science Division, although once they have been admitted to the department, the boundaries between the divisions are fluid. The principal area of interest of the student should determine which division to apply to. Students whose principal interests are in the following areas should apply to Electrical Engineering:

- **Communications and Networking**, which includes integrated and coding and encryption; network design; circuit and signal processing; distributed estimation; spatial sampling, network design and analysis; optical networking, market-based architectures, incentive compatibility, auction design; peer-to-peer networks, Quality of Service, communication for control, cross-layer optimization, network coding, and simulation tools, and (secure wired and wireless links, network availability and resilience, market-based approaches, authentication).
- **Control and Robotics**, which includes learning and optimization; engineering, peer-to-peer networking, game theory, semi-definite programming, Bayesian networks and graphical models, robotics (autonomous vehicles, biomimetic robotics, remote surgery, gripping and robotic systems), control, feedback control systems, nonlinear control, semiconductor process control, manufacturing, distributed control, sensor network control, robust control, communication, autonomous vehicles, air traffic control, and control over communication networks, and biological control systems (bio-mimetic robotics, neuro-prosthetic systems, computational motor control, human-centered control, man-machine systems, active and real-time perception, neuroengineering, biological systems modeling, and systems biology).
- **Design of Electronic Systems**, which includes electronic design automation (computer-aided design and optimization of complex hardware and software systems), embedded software systems (models of computation, specification languages, real-time systems, and hardware/software synthesis and compilation technologies), and modeling and verification (models of hardware and software systems together with analysis techniques that identify design flaws, performance problems, and vulnerabilities).
- **Energy**, which includes new devices and energy sources (solar thermal electric generation, vibration energy harvesters, bio energy generation, biofuels, fusion energy simulations, plasma physics, ultra low power delivery systems, power electronics, and electrical machines), on-device energy (on-chip power supplies, power management for mobile electronics, intermittent energy storage, organic semiconductor photovoltaics, and nonconventional actuation), sensor networks (distributed power management, ambient power, energy management for microprocessors), system-wide issues (advanced power management, energy-efficient computing, prevention of catastrophic failures, power grid security, large scale power network energy management, and demand response), and public policy (energy infrasstructure, cost of energy issues in scaling device technology to low cost devices, and pricing policy and economic models).
- **Integrated Circuits**, which includes applications (analog-to-digital and digital-to-analog conversion, automotive electronics, biosystems, computation, consumer electronics, medical electronics systems, signal processing, ubiquitous electronics, and wireless communications), circuit design (high-speed digital and high-frequency analog circuits, microwave circuits, nanoscale circuit, precision measurement, timing, voltages and currents, robust circuit design, and system architecture), devices and technology (bio/silicon interfaces, integrated sensors, signal systems, mixed material systems, and microelectromechanical systems), and energy management (high-power circuits, on-chip power distribution, power/performance tradeoffs, ultra-low-power circuits, and ultra-low-voltage circuits).
- **Physical Electronics**, which includes electro-magnetics (high frequency integrated circuit design, simulation, waveguides, and wireless channels), electronic devices (integrated circuit devices, organic electronics, semiconductor technologies, and nanoscale devices, microfluidic devices, nanoscale electronics, nanoscale fabrication (fabrication technologies for semiconductor, electronics, microelectromechanical systems, photonics, and other microcircuit and nanometer-scale systems, advanced process modeling, integration of heterogeneous systems, process modeling and simulation, lithography, and advanced metrology and manufacturing systems), microelectromechanical systems (electronic and physical systems, nanoscale systems for sensors and actuators, and silicon structures), nanotechnology (carbon nanotubes, nanowires, molecular-scale structures, quantum dots, and biological sensors and optical materials). (Infrared, visible light, ultraviolet, radio, microwave, and optical materials). (Infrared, visible light, ultraviolet, radio, microwave, and optical materials). (Infrared, visible light, ultraviolet, radio, microwave, and optical materials).

- **Signal Processing**, which includes theory and algorithms (adaptive signal processing, machine learning, and signal modeling; indexing, searching, and signal processing), distributed signal processing; signal processing; signal processing; signal processing; signal processing.
- **Database Management Systems**, which includes scalable techniques for data acquisition (sensor tasking, sampling, data integration and cleansing cleaning (federated databases, deep web, structure induction, anomaly detection), query processing and search (structured data, text and web repositories, personal information, data streams), declarative and parallel data processing (database, computer technology, network interfaces, storage systems, and quantum computing architectures).
- **Database Management Systems**, which includes scalable techniques for data acquisition (sensor tasking, sampling, data integration and cleansing cleaning (federated databases, deep web, structure induction, anomaly detection), query processing and search (structured data, text and web repositories, personal information, data streams), declarative and parallel data processing (database, computer technology, network interfaces, storage systems, and quantum computing architectures).
Doctor of Philosophy (Ph.D.)

The Department offers three types of Ph.D. degrees, awarded to students under the same conditions as the corresponding M.S. degrees, above:

- **Engineering—EECS**
- **Engineering Science**
- **Computer Science**

The principal requirements for the Ph.D. are:

1. coursework from a major subject area and two minor subject areas;
2. the Departmental preliminary requirement, consisting of an oral exam and breadth courses, which differ for EE and CS;
3. the qualifying exam; and
4. the dissertation.

There is no foreign language requirement. The median time for completion for the Ph.D. is 5.5 years. For further information on establishing major and minor subject areas, division-specific requirements for prelims and breadth requirements, qualifying exam, and the dissertation, please refer to the Graduate Handbook prepared by the Graduate Admissions Office at www.eecs.berkeley.edu/GradNotes for more information.

**Designated Emphasis:** In keeping with the Departmental priority given to cross-disciplinary applications of engineering and computer science, students may also choose to add a designated emphasis to their course of study. A designated emphasis is a specialized offering by the Department of existing Ph.D. programs that provides multi-disciplinary training and research opportunities outside of EECS proper, but in areas that share overlapping interests and goals. At present, three such designated emphases are available to our doctoral students in:

- **Communication, Computation and Statistics**
- **Computational and Genomic Biology**
- **Nanoscale Science and Engineering**

Students who pursue a Ph.D. degree receive recognition of their specialization in their transcripts and are well-positioned to compete for preferred jobs in academia and industry.

**The Management of Technology (MOT) Certificate Program:** This program is a joint effort between the College of Engineering, the Haas School of Business, and Electrical Engineering and Computer Sciences (EECS) at UC Berkeley. The program focuses on the set of management activities associated with bringing high-tech products to market. It is the most popular interdisciplinary program at UC Berkeley, with classes and fellowship programs made up of roughly an equal number of Haas MBAs, and SI and EECS M.S. and Ph.D. students. The MOT Certificate Program allows graduate students to specialize in the Management of Technology as they obtain their degrees.

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**Master of Science (M.S.)**

The Department awards three types of Master of Science degrees in:

- **Engineering—EECS:** For EE students with a B.S. degree from an accredited engineering program, or for those who have the equivalent of a B.S. degree as determined by the Department.
- **Engineering Science:** For EE students with a Bachelor’s degree in a non-engineering field (i.e., chemistry, physics, math, geology, or the life sciences).
- **Computer Science:** For CS students with a B.S. in computer science, or an equivalent as determined by the Department.

Students may choose to pursue Plan I, which requires writing a thesis, or they may pursue Plan II, which requires a report on a project. In either case, earning the Master’s usually takes from 1.5 to 2 years to achieve.

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**Electrical Engineering**

**Lower Division Courses**

20N. Structure and Interpretation of Systems and Signals. (4) Three hours of lecture and three hours of laboratory per week. Prerequisites: Mathematics 1B, 40. Mathematical modeling of signals and systems. Continuous and discrete signals, with applications to audio, images, video, communications, and control. State-based models beginning with automata and evolving to LTI systems. Frequency domain models for signals and frequency response for systems, and sampling of continuous-time signals. A Matlab-based laboratory is an integral part of this course. (F,SP) Ayazifar

24. Freshman Seminar. (1) One hour of seminar per week. Sections 1-2 to be graded on a letter grade basis. Sections 3-4 to be graded on a passed/not passed basis. The Freshman Seminar Program has been designed to provide new students with the opportunity to explore an intellectual topic with a faculty member in a small seminar setting. Freshman seminars are offered in all lower-division departments, and topics vary from department to department and semester to semester. (F,SP)

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40. Introduction to Microelectronic Circuits. (4) Students will receive credit for 40 after taking 100. Three hours of lecture, three hours of laboratory, and one hour of discussion per week. Prerequisites: Mathematics 1B and Physics 7B. Fundamental circuit concepts and analysis techniques in the context of digital electronic circuits. Transistor analysis of MOS logic families and basic integrated circuit technology and layout. (F,SP) Chang-Hsain

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42. Introduction to Digital Electronics. (3) Three hours of lecture and one hour of discussion per week. Prerequisites: Mathematics 1B. Electronic circuit elements, theory, digital circuits applications. Digital logic design and analysis. Transfer curves. Symmetry of PMOS and NMOS devices and CMOS circuits. Resistance and capacitance models for delay stage. (F,SP) Staff

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84. Sophomore Seminar. (1,2) Course may be repeated for credit as topics vary. May be taken concurrently or equivalent or consent of instructor. Using and understanding electronics laboratory equipment such as power supplies, computer, function generator, multimeter, curve-tracer, and RLC-meter. Includes a term project of constructing and testing a robot or other appropriate electronic/mechanical device. (F,SP) Staff
course covers the fundamental circuit and device concepts needed to understand analog integrated circuits. After an overview of the basic properties of semiconductors, the operation of the MOSFET is modeled as a large-signal device. Two port small-signal amplifiers and their realization using single stage and multistage CMOS building blocks are described. Sinusoidal steady-state signals are introduced and the principles of phasor analysis are developed, including impedance and the magnitude and phase response of linear circuits. The frequency response of single and multi-stage amplifiers are analyzed. Differential amplifiers are introduced. (F,SP) Jayvee, Wu

117. Electromagnetic Fields and Waves. (4) Three hours of lecture and one hour of discussion per week. Prerequisites: 40, Mathematics 53, 54, knowledge of phase and vector algebra as taught in 105. Formerly 117B. Review of static electric and magnetic fields and applications; Maxwell’s equations; transmission lines; propagation and reflection of plane waves; introduction to guided waves, microwave networks, and radiation and antennas. Minilabs on statics, transmission lines, and waves. (F,SP) Staff

118. Introduction to Optical Communication Systems and Networks. (3) Three hours of lecture per week. Prerequisites: 20 and 40. Basic principles of digital and analog communication systems and networks. Emphasis is on principles of optical links, including channel capacity, basic limitations due to noise processes, and bit error rate requirements. Optical amplification; optical fiber; space propagation, the transmitter, and modulation schemes. Coherent and incoherent communications and network systems. Basic optical Fourier transform signal processing techniques. (F) Gustafson

119. Introduction to Optical Engineering. (3) Three hours of lecture and three hours of discussion per week. Prerequisites: Physics 7C. Fundamental principles of optical systems. Geometrical optics and aberration theory. Stops and apertures, prisms, and mirrors. Diffraction and interferometric imaging and materials. Basic interferometry and photometry. Basic optical devices and the human eye. The design of optical systems. Lasers, fiber optics, and holography. (SP) Bokor


129. Neural and Nonlinear Information Processing. (3) Three hours of lecture per week. Prerequisites: 120 or consent of instructor. Principles of massively parallel real-time computation, optimization, and information processing via nonlinear dynamics and analog VLSI neural networks, applications selected from image processing, pattern recognition, feature extraction, motion detection, data compression, secure communication, biological eye, auto waves, and Turing patterns. (SP) Chua

130. Integrated-Circuit Devices. (4) Three hours of lecture and one hour of laboratory per week. Prerequisites: 120. Analysis and synthesis of continuous time and sampled-data linear feedback control systems. Advantages of feedback. Design by root locus, frequency response, and state space methods, with a comparison of techniques. Case studies. (F) Carmen


138. Feedback Control. (4) Three hours of lecture and three hours of laboratory per week. Prerequisites: 120, 126, 134, and familiarity with matrices and sampled-data linear feedback control systems. Selected applications of feedback. Design by root locus, frequency response, and state space methods, with a comparison of techniques. Case studies. (F) Carmen

142. Integrated Circuits for Communications. (4) Three hours of lecture and one hour of discussion per week. Prerequisites: 120 and 140. Analysis and design of electronic circuits for communications systems, with an emphasis on integrated circuits for wireless communication systems. Analysis of amplifiers and modulators with application to radio receiver design. Power amplifier design with application to wireless radio transmitters. Class A, Class B, and Class C power amplifiers. Feedback circuits. Frequency multiplication, oscillators, phase-locked loop, filters, modulators, and VCOs. (F) Niknejad

143. Microfabrication Technology. (4) Three hours of lecture and three hours of laboratory per week. Prerequisites: 40 and Physics 7B. Integrated circuit device technology. Thermal oxidation, ion implantation, impurity diffusion, film deposition, epitaxy, lithography, etching, contacts and interconnections, and process integration issues. Basic device fabrication and mask layout. Physical principles of silicon and integrated circuit processing and mechanical performance. MOX transistors and polysilicon microstructures will be fabricated in the laboratory and evaluated. (F,SP) Subramanian

C145B. Image Processing and Reconstruction Techniques. (4) Three hours of lecture and one hour of discussion per week. Prerequisites: 120; basic programming ability in C or FORTRAN. Linear systems and Fourier transforms in two and three dimensions. Basic image processing. Theory and algorithms for image reconstruction from projections. Physics of imaging systems including magnetic resonance, X-ray tomography, positron emission tomography, ultrasound, and magnetic imaging. Data analysis, parameter estimation, hypothesis testing, parameter estimation by least squares, and compartmental kinetic modelling. Field trips to medical imaging laboratories. Also listed as Bioengineering C185. (SP) Conolly

145L. Introductory Electronic Transducer Laboratory. (3) Two hours of lecture and three hours of laboratory per week. Prerequisites: 40. Laboratory exercises exploring a variety of electronic transducers for measuring physical quantities such as temperature, force, displacement, sound, light, motion, and flow. Design and construction of circuits for low-level differential amplification and analog signal processing; and the use of microcomputers for digital sampling and display. Lectures cover principles of transduction, signal processing, and computer interfacing. (F) Derenzo

C145L. Introductory Electronic Transducers Laboratory. (3) Two hours of lecture and three hours of laboratory per week. Prerequisites: 40. Laboratory exercises exploring a variety of electronic transducers for measuring physical quantities such as temperature, force, displacement, sound, light, ionic potential; the use of microprocessors for analog signal processing; and the use of microcomputers for digital sampling and display. Lectures cover principles of transduction, signal processing, and computer interfacing. (SP) Derenzo

145M. Introductory Microcomputer Interfacing Laboratory. (3) Two hours of lecture and three hours of laboratory per week. Prerequisites: 40 and 28B. Laboratory exercises constructing basic interfacing circuits and writing 20-100 line C programs for data acquisition, storage, analysis, display, and control. Use of the IBM PC and microcomputer peripheral devices, 8-bit parallel 1/O port, and analog-to-digital converter. Basic principles of basic digital logic, including arithmetic, interconnect, memories, and programmable logic arrays. Introduction to design methodologies, including hands-on experience. (F,SP) Alon, Rabaeby

146. Integrated Circuits for Communications. (3) Three hours of lecture and one hour of laboratory per week. Prerequisites: 120. Analysis and design of electronic circuits for communications systems, with an emphasis on integrated circuits for wireless communication systems. Analysis of amplifiers and modulators with application to radio receiver design. Power amplifier design with application to wireless radio transmitters. Class A, Class B, and Class C power amplifiers. Feedback circuits. Frequency multiplication, oscillators, phase-locked loop, filters, modulators, and VCOs. (F) Niknejad

147. Discrete Time and Quantized Communication Systems. (4) Three hours of lecture and one hour of laboratory per week. Prerequisites: 120 and 140. Design and implementation of digital communication systems using signal processing and error control. Thermal oxidation, ion implantation, diffusion, film deposition, epitaxy, lithography, etching, contacts and interconnections, and process integration issues. Basic device fabrication and mask layout. Physical principles of silicon and integrated circuit processing and mechanical performance. MOS transistors and polysilicon microstructures will be fabricated in the laboratory and evaluated. (F,SP) Subramanian

C148B. Image Processing and Reconstruction Techniques. (4) Three hours of lecture and one hour of discussion per week. Prerequisites: 120; basic programming ability in C or FORTRAN. Linear systems and Fourier transforms in two and three dimensions. Basic image processing. Theory and algorithms for image reconstruction from projections. Physics of imaging systems including magnetic resonance, X-ray tomography, positron emission tomography, ultrasound, and magnetic imaging. Data analysis, parameter estimation, hypothesis testing, parameter estimation by least squares, and compartmental kinetic modelling. Field trips to medical imaging laboratories. Also listed as Bioengineering C185. (SP) Conolly

148L. Introductory Electronic Transducer Laboratory. (3) Two hours of lecture and three hours of laboratory per week. Prerequisites: 40. Laboratory exercises exploring a variety of electronic transducers for measuring physical quantities such as temperature, force, displacement, sound, light, ionic potential; the use of microprocessors for analog signal processing; and the use of microcomputers for digital sampling and display. Lectures cover principles of transduction, signal processing, and computer interfacing. (F) Derenzo

C148L. Introductory Electronic Transducers Laboratory. (3) Two hours of lecture and three hours of laboratory per week. Prerequisites: 40. Laboratory exercises exploring a variety of electronic transducers for measuring physical quantities such as temperature, force, displacement, sound, light, ionic potential; the use of microprocessors for analog signal processing; and the use of microcomputers for digital sampling and display. Lectures cover principles of transduction, signal processing, and computer interfacing. (SP) Derenzo

148M. Introductory Microcomputer Interfacing Laboratory. (3) Two hours of lecture and three hours of laboratory per week. Prerequisites: 40 and 28B. Laboratory exercises constructing basic interfacing circuits and writing 20-100 line C programs for data acquisition, storage, analysis, display, and control. Use of the IBM PC and microcomputer peripheral devices, 8-bit parallel 1/O port, and analog-to-digital converter. Basic principles of basic digital logic, including arithmetic, interconnect, memories, and programmable logic arrays. Introduction to design methodologies, including hands-on experience. (F,SP) Alon, Rabaeby

149. Microcomputer Interfacing Laboratory. (3) Two hours of lecture and three hours of laboratory per week. Prerequisites: 40 and 28B. Laboratory exercises constructing basic interfacing circuits and writing 20-100 line C programs for data acquisition, storage, analysis, display, and control. Use of the IBM PC and microcomputer peripheral devices, 8-bit parallel 1/O port, and analog-to-digital converter. Basic principles of basic digital logic, including arithmetic, interconnect, memories, and programmable logic arrays. Introduction to design methodologies, including hands-on experience. (F,SP) Alon, Rabaeby
C145M. Introductory Microcomputer Interface Laboratory. Three hours of lecture and three hours of laboratory per week. Prerequisites: C140, Computer Science 61B or a working knowledge of ANSI C programming or consent of instructor. Laboratory exercises in interfacing circuitry to microcomputers 20-100 line C programs for data acquisition, storage, analysis, display, and control. Use of the IBM PC with microprogrammable digital counter/timer, parallel I/O ports, and various interfaces, including anti-aliasing filters, the S/H amplifier, A/D and D/A converters. Exercises include effects of aliasing in periodic sampling, fast Fourier transforms of basic waveforms, the use of the Hanning filter for leakage reduction, Fourier analysis of basic waveforms, and Fourier deconvolution. Lectures cover principles involved in the laboratory exercises and design of microcomputer-based systems for data acquisition, analysis, and control. Also listed as Bioengineering C145M. (F) Derenzo

192. Mechatronic Design Laboratory. (4) One and one-half hours of lecture and ten hours of laboratory per week. Prerequisites: C120, Computer Science 61B or 61C, 150 or equivalent. Project design course, focusing on application of theoretical principles in mechanical engineering to control of a small-scale system, such as a mobile robot. Small teams of students will design and construct a mechatronic system incorporating sensors, actuators, and intelligence. (SP) Fearing

H196A-H196B. Senior Honors Thesis Research. (4-4) Individual research. Prerequisites: Open only to students in the electrical engineering honors program. Thesis work under the supervision of a faculty member. This course may be taken by two or more students during any one academic quarter. Two or three students, at the end of either two semesters, submit a satisfactory thesis to the Electrical Engineering and Computer Science department archive. A total of six units must be taken. The units may be distributed between one or two semesters in any way. H196A-H196B count as graded technical elective units, but may not be used to satisfy the requirement for 20 upper division technical units in EECS. (F,SP) Staff

198. Directed Group Study for Advanced Undergraduate Students. (2-4) Independent study. Prerequisites: Consent of instructor and major advisor. Supervised independent study. Enrollment restrictions apply. (F,SP) Staff

199. Supervised Independent Study. (1-4) Enrollment is restricted; see the Introduction to Courses and Curriculum section of this catalog. Individual conferences. Must be taken on a passed/not passed basis. Prerequisites: Consent of instructor and major advisor. Supervised independent study. Enrollment restrictions apply. (F,SP) Staff

Graduate Courses

C201. Strategic Computing and Communications Technology. (3) Three hours of lecture per week. Prerequisites: Graduate standing in engineering, business administration, information management and systems, statistics, or consent of instructor. Factors strongly influencing the success of new computing and communications products and services (based on underlying technologies such as electronics and software) in commercial applications are examined. Time and frequency domain, discrete and continuous event simulation, cycle-based logic simulation, RTL and behavioral simulation, equivalence checking, timing analysis, and power estimation. (F,SP) Staff


C213. Soft X-rays and Extreme Ultraviolet Radiation. (3) Three hours of lecture per week. Prerequisites: Physics 110, 137, and Mathematics 53, 54 or equivalent. Formerly E Engineering 2903. This course will examine the fundamentals of the classical and quantum theory of applications of soft x-rays. It begins with a review of electromagnetic radiation at short wavelengths including dipole radiation, scattering and refractive index, and continues to topics of current interest. The course will include generation of x-rays with laboratory tubes, synchrotron radiation, laser-plasma sources, x-ray lasers, and black body radiation. Concepts of spatial and temporal coherence will be discussed. Also listed as Applied Science and Technology 210. (SP) Atwood

216. Antennas and Propagation. (3) Three hours of lecture per week. Prerequisites: 110 or consent of instructor. Application of Maxwell’s Equations to the study of antennas, arrays of elements, horns, reflector and lens systems, and antenna arrays. The propagation of waves over the earth and in inhomogeneous and random media. Offered alternate years. (SP) Staff

217. Microwave Circuits. (3) Three hours of lecture per week. Prerequisites: 117 and 140 or equivalent. Introduction to microwave circuit topology. The high-frequency regime above 1 GHz. Transmission lines and distributed circuit elements; S-parameter design of high-frequency active circuits; computer-aided analysis and design of linear microwave networks; microwave integrated circuits employing CMOS and SiGe technology. Circuit building blocks for broadband wired and wireless communication will be emphasized including oscillators, low-noise amplifiers, and power amplifiers. Offered alternate years. (SP) Niknejad

219A. Computer-Aided Verification of Electronic Circuits and Systems. (3) Three hours of lecture per week. Prerequisites: Consent of instructor; a course in linear algebra and on circuits is very useful. Formerly E Engineering 219A. This course deals with techniques for the verification of correct behavior of complex electronic circuits and systems including algorithms and systems for the detailed simulation of integrated circuits at the transistor level. Topics include timing analysis, testing, and logic verification. (F,SP) Staff

219B. Logic Synthesis. (3) Three hours of lecture and one hour of discussion per week. Must be taken on a passed/not passed basis. Prerequisites: Consent of instructor. The course covers the fundamental techniques for the design and analysis of digital circuits. The goal is to provide a detailed understanding of basic logic synthesis and analysis algorithms, and to enable students to apply this knowledge in the design of digital systems and EDA tools. The course will present combinational circuit optimization (two-level synthesis), sequential circuit optimization (state encoding, retiming), timing analysis, testing, and logic verification. (F,SP) Staff

219C. Computer-Aided Verification. (3) Three hours of lecture per week. Prerequisites: Consent of instructor; a course in linear algebra and on circuits is very useful. Formerly E Engineering 219C. This course introduces students to the theory and practice of formal methods for the design and analysis of systems, with a focus on automated algorithmic techniques. Covers selected topics in computational logic and automated theorem proving including formal models of reactive systems, temporal logic, model checking, and automated theorem proving. Applications in hardware and software verification, analysis of embedded, real-time, and hybrid systems, and computer security. A computer software package will be used to verify designs. Other topics that may be covered include control systems, optimization, and other areas will be explored as time permits. Offered alternate years. (F,SP) Seshia


221A. Linear System Theory. (4) Three hours of lecture and two hours of recitation per week. Prerequisites: 120; Mathematics 110 recommended. Basic system concepts; state-space representation. Properties of linear systems. Controllability, observability, minimality, state and output-feedback. Stability. Observers. Characteristic polynomial. Nyquist test. (F,SP) Staff


223. Stochastic Systems: Estimation and Control. (3) Three hours of lecture per week. Prerequisites: 226A (which students are encouraged to take concurrently). Parameter and state estimation. Diversity techniques over time, frequency, and space. Adaptive control. (SP) Staff

224A. Digital Communications. (4) Four hours of lecture and one hour of discussion per week. Prerequisites: 120 and 126, or equivalent. Formerly 224. Introduction to the basic principles of the design and analysis of most modern digital communication systems. Topics include source coding; channel coding; baseband and passband modulation techniques; receiver design; channel equalization; information theoretic techniques; block, convolutional, and trellis coding techniques; multiuser communications and spread spectrum; multi-carrier techniques and FDM; carrier and symbol synchronization. Applications to design of digital telephone networks, cellular phones, and digital wireless communication systems are illustrated. The concepts are illustrated by a sequence of MATLAB exercises. (F,SP) Staff

224B. Fundamentals of Wireless Communication. (3) Three hours of lecture per week. Prerequisites: 121, 223A, or equivalent. Introduction to the fundamentals of wireless communication. Modeling of the wireless multipath fading channel and its basic physical parameters. Coherent and noncoherent reception. Diversity techniques over time, frequency, and space. Spread spectrum communication. Multiple access and interference management in wireless networks. Frequency re-use, sectorization, Multiple access techniques; block, convolutional, and trellis coding techniques; multiuser communications and spread spectrum; multi-carrier techniques and FDM; carrier and symbol synchronization. Applications to design of digital telephone networks, cellular phones, and digital wireless communication systems are illustrated. The concepts are illustrated by a sequence of MATLAB exercises. (F,SP) Staff

225A. Digital Signal Processing. (3) Three hours of lecture per week. Prerequisites: 123 and 126 or solid background in stochastic processes and signal processing techniques in signal processing. Stochastic signal processing, parametric statistical signal models, and adaptive filtering. Application to spectral estimation, speech coding, adaptive equalization, noise cancelation, echo, cancellation, and linear prediction. (SP) Gasparr

225B. Digital Image Processing. (3) Three hours of lecture per week. Prerequisites: 123, 2-D sequences and systems, separable systems, projection slice thm, reconstruction from projections and partial Fourier in- vers. 2-D trade-off, different encodings, recursive computability, 2D DFT and FFT, 2D FIR filter design; human eye, perception, psychophysical vision prop-
229. Information Theory and Coding. (3) Three hours of lecture per week. Prerequisites: 226 recommended, Statistics 200A or equivalent. Formerly EECS 237B. Introduction to information theory and their application. Source and channel coding theorems. Galois field theory, algebraic error-correction codes. Private and public-key cryptographic systems. Offered alternate years. (SP) Anantharam

229B. Error Control Coding. (3) Three hours of lecture per week. Prerequisites: 126 or equivalent (some familiarity with basic probability). Prior exposure to information theory not necessary. Error control codes are an integral part of most communication and recording systems where they are primarily used to provide reliability to noise. In this course, we will cover the basics of error control coding. Physical principles and digital transmission and storage. We will discuss the major classes of codes that are important in practice, including Reed Muller codes, cyclic codes, Reed Solomon codes, convolutional codes, codes with low density parity check codes. The relevant background material from finite field and polynomial algebra will be developed as part of the course. Overview of topics: binary linear codes, Reed Muller codes, Galois fields; linear block codes over a finite field; cyclic codes; BCH and Reed Solomon codes; convolutional codes and trellis based decoding, message passing decoding algorithms; trellis based soft decision decoding of block codes; turbo codes; low density parity check codes. (SP) Anantharam


231. Solid State Devices. (4) Three hours of lecture and one hour of discussion per week. Prerequisites: 122, 227A. 30 hours of operational characteristics of semiconductor devices. Emphasis is on MOS field-effect transistors and their behaviors dictated by present and probable future technologies. Metal-oxide-semiconductor noise design and low field effects, device modeling, and impact on analog, digital circuits. (SP) Jayve, King, Liu


233. Lightwave Systems. (3) Three hours of lecture per week. Prerequisites: 120 and 121 or equivalent; 136 recommended. Transmission properties of optical fibers—dependence on wavelength and core-cladding material. Direct-detection systems: analog and digital modulation, transmitter design, receiver design, noise properties of single and multimode fiber links, dependence on source characteristics. (F) Wu

228A. High Speed Communications Networks. (3) Three hours of lecture per week. Prerequisites: 122, 228A (may be concurrently). Descriptions, models, and approaches to the design and management of networks. Optical transmission and switching technologies are described and analyzed using deterministic, stochastic, and simulation models. FDDI, DQDB, SMDS, Frame Relay, ATM, networks, and SONET. Applications demanding high-speed communication. (F) Varaiya, Wairand

228B. High Speed Communications Networks. (3) Three hours of lecture per week. Prerequisites: 122, 228A (may be concurrently). Descriptions, models, and approaches to the design and management of networks. Optical transmission and switching technologies are described and analyzed using deterministic, stochastic, and simulation models. FDDI, DQDB, SMDS, Frame Relay, ATM, networks, and SONET. Applications demanding high-speed communication. (F) Varaiya, Wairand

C235. Nanoscale Fabrication. (4) Three hours of lecture and one hour of discussion per week. Course discusses various top-down and bottom-up approaches to nanoscale processing and synthesis of materials. The topics include fundamentals of self-assembly, nano-imprint lithography, electron beam lithography, nanowire and nanotube synthesis, quantum dot synthesis, nanoelectromechanical systems, post-synthesis modification (oxidation, etching, diffusion) of nanoscale materials, and interfacial techniques. In addition, techniques to bridging length scales such as heterogeneous integration will be discussed. We will discuss new optical, thermal, mechanical, and chemical properties brought forth by the very small sizes. Also listed as Nanoscale Science and Engineering C203. (F) Chang-Hasnas

236A. Quantum and Optical Electronics. (3) Three hours of lecture per week. Prerequisites: 117A, Physics 137A or equivalent. Introduction of interaction with atomic and semiconductor systems, density matrix treatment, semiclassical laser theory (Lamb's), laser resonators, specific laser systems, laser dynamics, Q-switching and mode-locking, noise in lasers and optical amplifiers. Nonlinear optics, phase-conjugation, electrooptics, acoustooptics and magnetooptics, coherent optics, stimulated Raman and Brillouin scattering. Offered alternate years. (SP) Gustafson


C239. Partially Ionized Plasmas. (3) Three hours of lecture per week. Prerequisites: Upper division course in electromagnetics or fluid dynamics. Formerly 239. Introduction to partially ionized plasmas, including collisional processes, diffusion, sources, sheaths, boundaries, and diagnostics. DC, RF, and microwave discharges. Applications to plasma-assisted materials processing and to plasma wall interactions. Also listed as Applied Science and Technology C239. Offered alternate years. (SP) Lieberman

240. Advanced Analog Integrated Circuits. (3) Three hours of lecture per week. Prerequisites: 140. Advanced and optimized design of monolithic operational amplifiers and wide-band amplifiers; methods of achieving wide-band amplification, gain-bandwidth considerations; analysis of noise in integrated circuits applications; design of operational amplifiers, analog switches, amplifiers and comparators, voltage reference in NMOS and CMOS circuits, Serial, successive-approximation, and parallel analog-to-digital converters. Switched-capacitor and ADC filters. Applications to codecs, modems. (F.S.P) Bosser

241. Advanced Digital Integrated Circuits. (3) Three hours of lecture per week. Prerequisites: 141. Analysis and design of MOS and bipolar large-scale integrated circuits at the circuit level. Fabrication processes, device characteristics, parasitic effects static and dynamic aspects, low power techniques, analog-digital circuits and circuits for communications and signal processing applications. Calculation of speed and power consumption from layout and fabrication parameters. RAM, ROM, EPPROM circuit design. Use of SPICE and other computer aids. (SP) Nikolai, Rabaei

242. Advanced Integrated Circuits for Communications. (3) Three hours of lecture per week. Prerequisites: 142, 240. Analysis, evaluation and design of present-day integrated circuits for communications application, particularly those for which nonlinear response is necessary. Design of microwave transistors, MOS and bipolar MOS circuits, circuits including MOS, bipolar and CMOS circuits, audio and video power amplifiers, optimum performance of near-sinusoidal oscillators and frequency-translation circuits. Phase-locked loop ICs, analog and digital audio- and video-processing ICs, advanced components for telecommunication circuits. Use of new CAD tools and systems. (F.S.P) Meyer, Niknejad
243. Advanced IC Processing and Layout. (3) Three hours of lecture per week. Prerequisites: 143 or either 140 or 141. The key processes for the fabrication of integrated circuits: Optical, X-ray, and e-beam lithography, ion implantation, oxidation and diffusion. Thin film deposition. Wet and dry etching and ion milling. Effect of phase and defect equilibria on process control. (SP) Staff

244. Computer-Aided Design of Integrated Circuits. (3) Three hours of lecture per week. Prerequisites: 140 or 141. This course will cover a wide variety of topics relating to the development of computer aids for integrated circuit design. The course will emphasize state-of-the-art techniques and both the theoretical basis for the methods as well as the application of results to practical problems, including details of implementation. Topics to be covered include simulation, layout techniques, synthesis, verification, testing, and integrated design systems. (F) Keutzer

C245. Introduction to MEMS Design. (3) Three hours of lecture and one hour of discussion per week. Prerequisites: Graduate standing in engineering or science; undergraduates with consent of instructor. Physics, fabrication, and design of micro-electromechanical systems (MEMS). Micron-and nano-fabrication processes, including silicon surface and bulk micromachining and non-silicon micromachining. Integration strategies and assembly processes. Microsystem and microactuator devices: electrostatic, piezoelectric, piezoelectric, thermal, magnetic transduction. Electronic position-sensing circuits and electrical and mechanical noise. CAD for MEMS. Design project is required. Also listed as Mechanical Engineering C218, (F,SP) Staff

C246. Microelectromechanical Systems (MEMS). (3) Three hours of lecture per week. Prerequisites: Graduate standing or consent of instructor. This course is an introduction to the basic understanding of integrated circuit (IC) processes and microelectromechanical system (MEMS). Technologies including analyses, design, and manufacturing processes of MEMS will be introduced. Throughout the course emphasis will be placed on the key processes including thin film deposition, lithography, and etching. The second part of the course deals with micromachining processes including surface- and bulk-micromachining, LIGA and other processes. Also listed as Mechanical Engineering C219. (SP) Pisano

247. Analysis and Design of VLSI Analog-Digital Interface Integrated Circuits. (3) Three hours of lecture per week. Prerequisites: 240. Architectural and circuit level design and analysis of integrated analog-to-digital and digital-to-analog interfaces in CMOS and BiCMOS VLSI technology. Analog-digital converters, digital-analog converters, sample/hold amplifiers, continuous and switched-capacitor filters, RF integrated electronics, including synthesizers, LNA’s, and baseband processing. Low power mixed signal design. Data communications functions including clock recovery. CAD tools for analog design including simulation and synthesis. Khornabuddi

249. Embedded System Design: Models, Validation, and Synthesis. (4) Four hours of lecture and two hours of laboratory/discussion per week. Prerequisites: Background in SoC design, operating systems and compilers, or consent of instructor. Principles of embedded system design. Focus on design methodologies and foundations. Platform-based design and communication-based design and their relationship with design time, re-use, and performance. Models of computation using their in design capture, manipulation, verification, and synthesis. Mapping into architecture and system platforms. Performance estimation, Scheduling and real-time requirements. Synchronous languages and time-triggered protocols to simplify the design and implementation for high-programmable platforms. Synthesis and successive refinement: meta-model of computation. Use of design tools and analysis of their capabilities and limitations. Programming: P0C, LISA, VCC, Cc-ware, (F) San giovanni-Vincenelli

290. Advanced Topics in Electrical Engineering. Course may be repeated for credit. One to three hours of lecture per week. Prerequisites: Consent of instructor. The 290 courses cover current topics of research interest in electrical engineering. The course content may vary from semester to semester. 290A. Advanced Topics in Computer-Aided Design. (1-3) 290B. Advanced Topics in Solid State Devices. (1-3) 290C. Advanced Topics in Circuit Design. (1-3) 290D. Advanced Topics in Semiconductor Technology. (1-3) 290E. Advanced Topics in Electromagnetics and Plasmas. (1-3) 290F. Advanced Topics in Photonics. (1-3) 290G. Advanced Topics in Mems, Microsystems, and Microactuators. (1-3) 290H. Advanced Topics in Semiconductor Manufacturing. (1-3) 290K. Advanced Topics in Optimization. (1-3) 290N. Advanced Topics in System Theory. (1-3) 290O. Advanced Topics in Control. (1-3) 290P. Advanced Topics in Bioelectronics. (1-3) 290Q. Advanced Topics in Communication Networks. (1-3) 290S. Advanced Topics in Communications and Information Theory. (1-3) 290T. Advanced Topics in Signal Processing. (1-3) 290X. Advanced Topics in Management and Social Issues in Electrical Engineering and Computer Sciences. (1-3) 290Y. Organic Materials in Electronics. (3) Prerequisites: 130; undergraduate general chemistry. Organic materials are seeing increasing application in electronics applications. This course will provide an overview of some of the most widely used classes of organic materials with relevance to electronics. Students will study the technology, physics, and chemistry of their use in the third most rapidly growing major application domains—energy conversion/generation devices (fuel cells and photovoltaics), organic light-emitting diodes, and organic transistors. (F,SP) Subramanian

C291. Control and Optimization of Distributed Parameter Systems. (3) Three hours of lecture per week. Distributed systems and PDE models of physical systems (e.g., solid and fluid mechanics, traffic flow, water distribution, fluid mechanics, electromagnetism, blood vessels, beams, road pavement, structures, etc.). Fundamental solution methods for PDEs: separation of variables, self-similar solutions, characteristics, numerical methods, spectral methods. Stability analysis. Adjoint-based optimization. Lyapunov stabilization. Differential flatness. Viability control. Hamilton-Jacobi-based control. Also listed as Civil and Environmental Engineering C291F and Mechanical Engineering C236. (SP) Bayen

C291E. Hybrid Systems and Intelligent Control. (3) Three hours of lecture per week. Formerly 291E. Analysis of hybrid systems formed by the interaction of continuous and discrete-event controllers. Discrete-event systems models and language descriptions. Finite-state machines and automata. Model verification and control of hybrid systems. Signal-to-symbol conversion and logic controllers. Adaptive, neural, and fuzzy-control systems. Applications to robotics and Intelligent Vehicle and Highway Systems (IVHS). Also listed as Mechanical Engineering C290S, Hedrick

297. Field Studies in Electrical Engineering. (1-12) Course may be repeated for credit. Individual conferences. Must be taken together. (F,SP) Pister

Group Studies, Seminars, or Group Research. (1-4) Course may be repeated for credit. One to four hours of lectures per unit. Section 1-40 to be graded on a satisfactory/unsatisfactory basis. Sections 41-49 to be graded on a letter-grade basis. Advanced study in various subjects through special seminars on topics to be selected each year, informal group studies of special problems, group participation in comprehensive design problems, or group research on complete problems for analysis and experimentation. (F,SP) Staff

299. Individual Research. (1-12) Course may be repeated for credit. Independent, individual study or investigation. Investigation of problems in electrical engineering. (F,SP) Staff

Professional Courses

602. Individual Study for Doctoral Students. (1-8) Course may be repeated for credit. Course does not satisfy unit or residence requirements for doctoral degree. Independent study, in consultation with faculty member. Must be taken on a satisfactory/unsatisfactory basis. Prerequisites: Graduate standing. Weekly seminars and discussions of effective teaching techniques. Use of educational objectives, alternative forms of instruction, and special techniques for teaching key concepts and techniques in electrical engineering. Student and self-evaluation. Course is intended to orient new graduate student instructors to teaching in the Electrical Engineering Department at Berkeley. (F,SP) Staff

Computer Science

Except for CS 2, 95, and 99 the lower division Computer Science courses are subject to the computing service course restriction. See the Computer Science section preceding the Electrical Engineering course listings.

Lower Division Courses

3. Introduction to Symbolic Programming. (4) Refer to computer science service course restrictions. Two hours of lecture, one hour of discussion, and two hours of scheduled programming laboratory per week. Prerequisites: High school algebra. Introduction to computer programming, emphasizing symbolic computation and functional programming style. Students will write a project of at least 200 lines of code, using the Scheme programming language. (F) Clancy

3L. Introduction to Symbolic Programming. (4) One hour of lecture and six hours of laboratory per week and approximately five hours of self-scheduled programming laboratory. Prerequisites: High school algebra. Introduction to computer programming, emphasizing symbolic computation and functional programming style. Students will write a project of at least 200 lines of code in Scheme (a dialect of the LISP programming language). (F,SP) Clancy

3S. Introduction to Symbolic Programming (Self-paced). Must be taken in the computer science service course restrictions. Course may be repeated up to 4 units. One to four hours of discussion and three to nine hours of laboratory per week. Prerequisites: High school algebra. The material as 3 but in a self-paced format. Introduction to computer programming, emphasizing symbolic computation and functional programming style, using the Scheme programming language. Units assigned depend on amount of work completed. The first two units must be taken together. (F,SP) Clancy, Garcia

9A. Matlab for Programmers. (1) Refer to computer science service course restrictions. Self-paced. Must be taken on a pass/fail option. Prerequisites: Student has good experience with programming languages gained in 4, familiarity with applications of matrix processing. Introduction to the constructs in the Matlab programming language, aimed at students who already know how to
9B. Pascal for Programmers. (1) Refer to computer science service course restrictions. Self-paced. Must be taken on a passed/not passed basis. Prerequisites: Programming experience similar to that gained in 3 or 77. Self-paced Pascal course for students who already know how to program. Program provided with the use of pointers and linked data structures that is assumed as prerequisite for 9C and 9F. (F,S,P) Clancy, Garcia

9C. C for Programmers. (1) Refer to computer science service course restrictions. Must be taken on a passed/not passed basis. Prerequisites: Programming experience with pointers (or addresses in assembly language) and linked data structures equivalent to that gained in 9B, 61A, or Engineering 77. Self-paced course in the C programming language for students who already know how to program. Input and output, flow of control, functions, arrays, and pointers, linked structures, use of dynamic storage, and implementation of abstract data types. (F,S,P) Clancy, Garcia

9D. Scheme and Functional Programming for Programmers. (1) Refer to computer science service course restrictions. Must be taken on a passed/not passed basis. Prerequisites: Programming experience similar to that gained in Engineering 77. Self-paced course in functional programming, using the Scheme programming language, for students who already know how to program. Recursion, higher-order functions, list processing, implementation of rule-based querying. (F,S,P) Clancy, Garcia

9E. Productive Use of the UNIX Environment. (1) Refer to computer science service course restrictions. Self-paced. Must be taken on a passed/not passed basis. Prerequisites: Programming experience equivalent to that gained in 9B, 61A, or Engineering 77. Self-paced introduction to the constructs provided in the C++ programming language for procedural and object-oriented programming for students who already know how to program. Concepts, programming laboratory. (F,S,P) Clancy, Garcia

9F. JAVA for Programmers. (1) One hour of self-paced. Must be taken on a passed/not passed basis. Prerequisites: 9C or 9F or 61A plus experience with object-oriented programming or C-based language. Self-paced course in Java for students who already know how to program. Applets; variables and computation; events and flow of control; classes and objects; inheritance; GUI elements; applications; arrays, strings, files, and linked structures; exceptions; threads. (F,S,P) Clancy, Garcia

9G. Python for Programmers. (1) Refer to computer science service course restrictions. Self-paced. Must be taken on a passed/not passed basis. Prerequisites: Programming experience equivalent to that gained in 3 or 4. Introduction to the constraints provided in the Python programming language, aimed at students who already know how to program. Flow of control; strings, tuples, lists, and dictionaries; CGI programming; file input and output; OOP; and other linked structures. (F,S,P) Clancy, Garcia

9H. Placement Computer Science A course. Introduction to programming and computer science. This course exposes students to techniques of abstraction at several levels: (a) within a programming language using higher-order functions, manifest types, data-directed programming, and message-passing; (b) between programming languages, using functional and rule-based languages as examples; (c) using techniques to the practical problems of implementing languages and algorithms on a von Neumann machine. There are several significant programming projects. (F,S,P) Clancy, Garcia, Harvey

61B. Data Structures. (4) Students will receive no credit for 61B after taking 61BL. Three hours of lecture, one hour of discussion, two hours of programming laboratory, and an average of six hours of self-scheduled programming laboratory per semester for eight weeks. Prerequisites: A grade of B- or better in 61A with a grade of B- or better. Fundamental data structures, including linear lists, queues, trees, and other linked structures; arrays, strings, and hash tables. Storage management. Elementary principles of software engineering. Abstract data types. Algorithms for sorting and searching. Introduction to the Java programming language. (F,S,P) Clancy, Hillinger, Shewchuk

61BL. Data Structures and Programming Methodology. (4) Students will receive no credit for 61B after taking 61BL. Three hours of lecture, six hours of laboratory per week and an average of five hours of self-scheduled programming laboratory. Prerequisites: A grade of B- or better in 61A. The same material as in 61B, but in a laboratory-based format. (F,S,P) Clancy, Hillinger

61C. Machine Structures. (4) Students will receive no credit for 61C after taking 47C. Three hours of lecture, two hours of laboratory, and one hour of discussion per week. Prerequisites: 61B or 47B. The internal organization and operation of digital computers. Machine architecture, support for high-level languages (logic, arithmetic, instruction sequencing) and operating systems (multiprocessing, memory management, and address switching). Elements of computer logic design. Trade-offs involved in fundamental architectural design decisions. (F,S,P) Clancy, Wawrzynek, Staff

70. Discrete Mathematics and Probability Theory. (4) Students will receive no credit for 70 after taking Mathematics 55. Three hours of lecture per week, or three hours of lecture and two hours of discussion per week. Prerequisites: Sophomore mathematical maturity, and programming experience equivalent to that gained in 3 or the Advanced Placement Computer Science A course. Logic, infinity, and induction; applications include undecidability and stable marriage problems. Modular arithmetic and GCDs; applications include primality testing and error-correcting codes; combinatorial and asymptotic analysis of algorithms; examples include error correcting codes and interpolation. Probability including sample spaces, independence, random variables, law of large numbers; examples include load balancing, existence arguments, Bayesian inference. Demmel, Papadimitriou, Sinclair, Vazirani

84. Sophomore Seminar. (1,2) Course may be repeated for credit as topic varies. One hour of seminar per week per unit for fifteen weeks. One and one-half hours of seminar per week per unit for eight weeks. Three hours of seminar per week per unit for eight weeks. Three hours of seminar per week per unit for five weeks. Sessions 1-2 are to be graded on a passed/not passed basis. Sessions 3-4 are to be graded on a letter-grade basis. Prerequisites: At discretion of instructor. Sophomore seminars are small interactive courses offered by faculty members in departments in all the campus. Sophomore seminars offer opportunity for students to further explore intellectual interests subject to consent of the faculty and students in the crucial second year. The topics vary from department to department and semester to semester. Enrollment limited to 15 sophomores. (F,S,P)

98. Directed Group Study. (1-4) Course may be repeated for credit. One hour of lecture per week per unit. Must be taken on a passed/not passed basis. Prerequisites: Consent of instructor. Seminars for
group study of selected topics, which will vary from year to year. Intended for students in the lower division. (F,SP) Staff

99. Individual Study and Research for Undergraduates. (1-2) Course may be repeated for credit. Must be taken on a pass/no pass or not pass basis. Prerequisites: GPA of 3.4 or better. A course for lower division students in good standing who wish to undertake a program of individual inquiry initiated jointly by the student and a faculty member. Supervised by the supervising professor, but the supervising professor must be convinced that the student is able to profit by the program. (F,SP) Staff

Upper Division Courses

150. Components and Design Techniques for Digital Systems. (5) Three hours of lecture, one hour of discussion, and three hours of laboratory per week. Prerequisites: 61C, Electrical Engineering 49 or 42. Barman. Software design techniques, including logic design, implementation in standard cell libraries, computer-aided design. Design of digital computer building blocks as case studies. Introduction to computer-aided design software. Formal hardware laboratories and substantial design projects. Computer laboratory periods normally throughout semester. (F,SP) Katz, Pister, Wawrynek

152. Computer Architecture and Engineering. (5) Three hours of lecture and two hours of discussion per week. Prerequisites: 61C. Instruction set design, Register Transfer. Computer design project requiring about 100 man-weeks. Controller design, memory system. Addressing, Microprogramming. Computer arithmetic. Survey of real computers and microprocessors. (F,SP) Culter, Kubiakowitz, Wawrynek

160. User Interface Design and Development. (4) Three hours of lecture, one hour of discussion, and four hours of self-scheduled programming laboratory per week. Prerequisites: 61B. The design, implementation, and evaluation of human/computer interfaces. Interface devices (keyboard, pointing, display, audio, etc.), metaphors (desktop, notecards, rooms, ledger sheets, etc.), interaction styles and dialog models, design process, and evaluation of human/computer interfaces. Interface-development methodologies, implementation techniques, and quality assessment. Students will develop a direct-manipulation interface. Agrawala, Bajcsy, Canny

161. Computer Security. (4) Three hours of lecture and one hour of discussion per week. Prerequisites: 61C (Machine Structures), plus either 70 (Discrete Mathematics) or 95 (Introduction to Computer Security). Cryptography, including encryption, authentication, hash functions, cryptographic protocols, and applications. Operating system security, access control. Network security, firewalls, viruses, and worms. Software security, defensive programming, and language-based security. Case studies from real-world systems. (F,SP) Joseph, Tygar, Vazirani, Wagner

162. Operating Systems and System Programming. (4) Three hours of lecture, one hour of discussion, and four hours of programming laboratory per week. Prerequisites: 61B, 61C, and Math 55. Basic concepts of operating systems and system programming. Utility programs, subsystems, multi-program systems. Processes, interprocess communication, and synchronization. Allocation, virtual memory, protection. Access methods and file systems. Hierarchical, network, and distributed file systems to facilitate data access. Hierarchical, network, relational, and object-oriented data models. Query languages for models. Embedding query languages in programming languages. Database services including support for integrity and security. Views of data. High-level interfaces including application generators, browsers, and report writers. Introduction to transaction processing. Database system implementation to be done as term project. (F,SP) Franklin, Hellerstein


C182. The Neural Basis of Thought and Language. (4) Three hours of lecture and one hour of discussion per week. Prerequisites: 61B: Cognitive Science C101, Linguistics C105 or Cognitive Science C100, Psychology C120B; or consent of instructor. This is a course of interdisciplinary and historical studies that seeks to answer the following questions: (1) How is it possible for the human brain, which is a highly structured network of neurons, to think and to learn, use, and understand language? (2) How are language acquisition, memory, control, and our other neural systems, including social cognition? (3) How do the computational properties of neural systems and the specific neural structures of the human brain shape the nature of thought and language? Much of the course will focus on the Neural Theory of Language (NTL), which seeks to answer these questions in terms of architecture and mechanisms, using models and simulations of language and learning phenomena. Also listed as Cognitive Science C110 and Linguistics C109. (SP)

184. Foundations of Computer Graphics. (4) Three hours of lecture, one hour of discussion, and three hours of laboratory per week. Prerequisites: 61B; programming skills in C, C++, Java, or MATLAB; linear algebra and calculus. Technology and modern objects for the purpose of computer rendering; boundary representations, constructive solids geometry, hierarchical scene descriptions. Mathematical techniques for curve and surface representation. Basic elements of a computer graphics rendering pipeline; architecture of modern graphics display devices. Geometrical transformations such as rotation, scaling, translation, and their matrix representation. Homogeneous coordinates, projection and perspective transformations. Algorithms for clipping, hidden surface removal, rasterization, and antialiasing. Scan-line based and ray-based rendering algorithms. Lighting models for reflection, refraction, transparency. (F,SP) Barisky, O’Brien, Sequin

186. Introduction to Database Systems. (4) Three hours of lecture and one hour of discussion per week. Prerequisites: 61B and 61C. Access methods and file systems to facilitate data access. Hierarchical, network, relational, and object-oriented data models. Query languages for models. Embedding query languages in programming languages. Database services including support for integrity and security. Views of data. High-level interfaces including application generators, browsers, and report writers. Introduction to transaction processing. Database system implementation to be done as term project. (F,SP) Franklin, Hellerstein

C191. Quantum Information Science and Technology. (3) Three hours of lecture/discussion per week. Prerequisites: Mathematics 54, Physics 7A-7B, and either Physics 7C, Mathematics 55, or Computer Science 170. This course provides an introduction to fundamental conceptual aspects of quantum mechanics from a computational and informational theoretic perspective, as well as physical implementations and technology of quantum information science. Basic sections of quantum algorithms, complexity, and cryptography, will be touched upon, as well as pertinent physical realizations and implementations of quantum science and engineering. Also listed as Physics C191 and Chemistry C191. (F,SP) Crommie, Vazirani, Whaley

194. Special Topics. (1-4) Course may be repeated for credit as topic varies. One to fours hours of lecture/discussion per week. Prerequisites: Consent of instructor. Topics will vary between and across semesters. See the Computer Science Division announcements. (F,SP) Staff

195. Social Implications of Computer Technology. (2) Three hours of lecture/discussion per week. Must be taken on a passed/not passed basis. Prerequisites: 61B or CSE 62 or CS 70 or consent of instructor. Topics include electronic community; the changing nature of work; technological risks; the information economy; intellectual property; privacy; artificial intelligence and the sense of self; pornography and censorship; professional ethics. Students will lead discussions on some of these topics. (SP) Harvey

C195. Social Implications of Computer Technology. (2) Three hours of lecture/discussion per week. Must be taken on a passed/not passed basis. Topics include electronic community; the changing nature of work; technological risks; the information economy; intellectual property; privacy; artificial intelligence and the sense of self; pornography and censorship; professional ethics. Students will lead discussions on some of these topics. Also listed as Interdisciplinary Studies Field Maj C155. (Harvey

H196A-H196B. Senior Honors Thesis Research. (1-4,1-4) Individual research. Prerequisites: Open only to students in the computer science program. Thesis work under the supervision of a faculty member. To obtain credit the student must, at the end of two semesters, submit a satisfactory thesis to the Electrical Engineering and Computer Science department for approval. A total of four units is awarded. The units may be divided between one or two semesters in any way. H196A-H196B count as graded technical elective units, but may not be used to satisfy the requirement for 57 upper-division units in the College of Letters and Science with a major in Computer Science. (F,SP)

198. Directed Group Studies for Advanced Undergraduates. (1-4) Course may be repeated for
Credit. Course format varies with section. Must be taken on a pass/never passed basis. Prerequisites: 2.0 GPA or better; 60 units completed. Group study of selected topics in Computer Sciences, usually relating to new developments.

199. Supervised Independent Study. (1-4) Enrollment is restricted; see the Introduction to Courses and Curricula section of this catalog. Individual conferences. Must be taken on a pass/never passed basis. Prerequisites: Consent of instructor and major adviser. Supervised independent study. Enrollment restrictions apply. (F,SP) Staff

Graduate Courses

250. VLSI Systems Design. (4) Three hours of lecture and four hours design laboratory per week. Prerequisites: 150. Unified top-down and bottom-up design of integrated circuits. Architectural and topological issues. VLSI architectures, systolic arrays, self-timed systems. Trends in VLSI development. Physical limits. Tradeoffs in custom-design, standard cells, gate arrays. VLSI design tools. (F,SP) Wawer

252. Graduate Computer Architecture. (4) Three hours of lecture and one hour of discussion per week. Prerequisites: 152. Graduate survey of contemporary computer organizations covering: early systems, CPU design, instruction sets, instruction window, ALU, memory, I/O interfaces, connection networks, virtual memory, pipelined computers, multiprocessors, and case studies. Term paper or project is required. (F,SP) Culler, Kubiatowicz, Patterson


260. User-Interfaces to Computer Systems. (3) Three hours of lecture per week. Prerequisites: 162 and 164 recommended, or consent of instructor. Formerly CS 287. Design and implementation of user-interfaces to computer systems. Software and hardware architectures for personal workstations. Object-oriented programming systems. Form-based user-interfaces. Window display and management abstractions. Case studies of naive- and expert-user interfaces. Students will complete a substantial project. Canny

261. Security in Computer Systems. (3) Three hours of lecture per week. Prerequisites: 162. Graduate survey of the complete- ness of modern topics in computer security, including protection, access control, distributed access security, firewalls, secure coding practices, safe languages, mobile code, and case studies from real-world systems. May also cover cryptographic protocols, privacy and anonymity, and/or other topics as time permits. (SP) Brewer

262A. Advanced Topics in Computer Systems. (4) Three hours of lecture per week. Prerequisites: 262 and enrollment in Computer Sciences. Formerly 262B. Graduate survey of systems for managing computation and information, covering a breadth of topics: early systems; volatile memory management, including virtual memory and buffer management; persistent memory systems, including both file systems and transactional storage managers; storage metadata, physical vs. logical naming, schema processing, threading and concurrency control; system support for networking, including remote procedure calls, transactional RPC, TCP, and active messages; security infrastructure; exploitation of system calls, analysis and engineering of large software systems. Homework assignments, exam, and term paper or project required. (F,SP) Hetherington

262B. Advanced Topics in Computer Systems. (3) Three hours of lecture per week. Prerequisites: 262A. In-depth study of current trend for managing information and computation. Topics include principles of distributed systems for concurrency and recovery, parallelism, including parallel architectures, query processing and scheduling; distributed data management, including distributed and parallel file systems, caching strategies, large-scale data analysis and search. Homework assignments, exam, and term paper or project required. (F,SP) Brewer, Franklin, Hetherington, Joseph

263. Design of Programming Languages. (3) Three hours of lecture and one hour of discussion per week. Prerequisites: 164. Selected topics from: analysis, comparison, and design of programming languages, formal description of syntax and semantics, advanced programming techniques, structured programming, debugging, version control systems, and memory consistency models. Message passing: protocols, directories, and memory consistency models. Message passing: protocols, storage management, and deadlock. Efficient network interface, protection, events, active messages, and co-processors in large-scale designs. Latency tolerance through prefetching, multithreading, dynamic instruction scheduling, and software techniques. Network design: topology, packaging, k-ary n-cubes, and performance under contention. Synchronization: global operations, mutual exclusion, and events. Alternative architectures: dataflow, SIMD, systolic arrays. Culler

265. Compiler Optimization and Code Generation. (3) Three hours of lecture per week. Prerequisites: 164. Table-driven and retargetable code generators. Register allocation and Live variable analysis. Transformation methods. Code optimization for advanced languages and architectures. Local code improvement. Optimization by program transformation. Selected additional topics. A term paper or project is required. Graham


271. Randomness and Computation. (3) Three hours of lecture per week. Prerequisites: 170 or equivalent. Formerly 292T. Constructive problems in computational geometry: convex hulls, triangulations, Voronoi diagrams, arrangements. Computational aspects of combinatorial algorithms. Search problems: advanced data structures; subdivision search; various kinds of range searches. Models of computation; lower bounds. Staff

274. Cryptography. (3) Three hours of lecture per week. Prerequisites: 170. Graduate survey of modern topics on the mathematical foundations, and applications of cryptography. One-way functions; pseudorandomness; encryption; authentication; public-key cryptosystems; notions of security. May also cover zero-knowledge proofs, multi-party cryptography protocols, practical applications, and/or other topics, as time permits. (F,SP) Trevisan, Wagner

276. Machine-Based Complexity Theory. (3) Three hours of lecture per week. Prerequisites: 170. Properties of abstract complexity measures; Determinism vs. non-determinism; time vs. space complexity hierarchies; aspects of the P-NP question; relative power of various abstract machines. Vazirani

C280. Computer Vision. (3) Three hours of lecture per week. Prerequisites: Knowledge of linear algebra and Fourier transforms. Mathematical and algorithmic tools for computer vision. Essential background in linear algebra and optimization; familiarity with probability, signal processing, and computer programming. Topics: image modeling, image formation, image processing, feature detection and extraction, object recognition and modeling, machine learning, robot vision, stereo vision, and computer graphics. Staff

C281A. Advanced Topics in Learning and Decision Making. (3) Three hours of lecture per week. Prerequisites: Consent of instructor. Formerly 264C. Introduction to modern topics in learning and decision making. Topics will vary. Topics may include: complex and distributed systems, hierarchical and distributed systems, and applications of distributed systems to real-world problems. Staff

C281B. Advanced Topics in Learning and Decision Making. (3) Three hours of lecture per week. Prerequisites: C281A. Statistics C241A. Recent topics include: Graphical models and approximate inference algorithms. Markov chain Monte Carlo, mean field and approximate inference algorithms; analysis of continuous-time Markov chains, applications of data structure techniques to sorting, searching, and geometric problems. Papadimitriou, Sinclair, Vazirani

C282A. Computational Geometry. (3) Three hours of lecture per week. Prerequisites: 170 and at least one course numbered 270-279. Computational aspects of combinatorial algorithms; approximation algorithms; randomized algorithms. Approximate counting and uniform generation of combinatorial objects, rapid convergence of random walks on expander graphs, explicit construction of expander graphs, randomized reductions, Kolmogorov complexity, pseudo-random number generation, semi-random sources. Sinclair

C282V. Three hours of lecture per week. Prerequisites: 170, or consent of instructor. Formerly 292K. Fundamental theoretical issues in designing parallel algorithms and architectures. Shared memory models of parallel computation. Parallel algorithms for linear algebra, sorting, Fourier Transform, recurrence evaluation, and graph problems, Interconnection network based models. Algorithm design techniques for networks like hypercubes, shuffle-exchanges, threes, meshes and butterfly networks. Systolic arrays and techniques for generating them. Message routing. Staff

Course may be repeated for credit. Three hours of lecture per week. Prerequisites: 170 or equivalent. Formerly 292T. Constructive problems in computational geometry: convex hulls, triangulations, Voronoi diagrams, arrangements. Computational aspects of combinatorial algorithms. Search problems: advanced data structures; subdivision search; various kinds of range searches. Models of computation; lower bounds. Staff

C284. Linear Algebra and Applications. (3) Three hours of lecture per week. Prerequisites: 170. Graduate survey of modern topics on the mathematical foundations, and applications of cryptography. One-way functions; pseudorandomness; encryption; authentication; public-key cryptosystems; notions of security. May also cover zero-knowledge proofs, multi-party cryptography protocols, practical applications, and/or other topics, as time permits. (F,SP) Trevisan, Wagner

C286. Advanced Topics in Computer Systems. Three hours of lecture per week. Prerequisites: 262 and enrollment in Computer Sciences. Formerly 262B. Graduate survey of systems for managing computation and information, covering a breadth of topics: early systems; volatile memory management, including virtual memory and buffer management; persistent memory systems, including both file systems and transactional storage managers; storage metadata, physical vs. logical naming, schema processing, threading and concurrency control; system support for networking, including remote procedure calls, transactional RPC, TCP, and active messages; security infrastructure; exploitation of system calls, analysis and engineering of large software systems. Homework assignments, exam, and term paper or project required. (F,SP) Hetherington


274. Cryptography. (3) Three hours of lecture per week. Prerequisites: 170. Graduate survey of modern topics on the mathematical foundations, and applications of cryptography. One-way functions; pseudorandomness; encryption; authentication; public-key cryptosystems; notions of security. May also cover zero-knowledge proofs, multi-party cryptography protocols, practical applications, and/or other topics, as time permits. (F,SP) Trevisan, Wagner

C288. Machine-Based Complexity Theory. (3) Three hours of lecture per week. Prerequisites: 170. Properties of abstract complexity measures; Determinism vs. non-determinism; time vs. space complexity hierarchies; aspects of the P-NP question; relative power of various abstract machines. Vazirani

C280. Computer Vision. (3) Three hours of lecture per week. Prerequisites: Knowledge of linear algebra and Fourier transforms. Mathematical and algorithmic tools for computer vision. Essential background in linear algebra and optimization; familiarity with probability, signal processing, and computer programming. Topics: image modeling, image formation, image processing, feature detection and extraction, object recognition and modeling, machine learning, robot vision, stereo vision, and computer graphics. Staff

C281A. Statistical Learning Theory. (3) Three hours of lecture per week. Prerequisites: Linear algebra, calculus, basic probability, and statistics, algorithms, Rec-
282. Algebraic Algorithms. (3) Three hours of lecture per week. Prerequisites: 164, Mathematics 113B, or permission of instructor. Theory and construction of algebraic algorithms. Emphasis on efficient techniques for solving polynomial equations, linear equations, and problems of combinatorial enumeration. Polynomial arithmetic, GCD, factorization, integration of elementary functions, analytic approximation, simplification, design of computer systems and languages for symbolic manipulation. T. Fateman

284. Computer-Animated Geometric Design and Modeling. (3) Three hours of lecture per week. Prerequisites: 184. Fundamentals of geometric design and computer-based systems suitable for manufacturing or rapid prototyping. Solid modeling techniques and procedural shape generation. Effective data structures and unambiguous part description for use with solid modeling systems for dealing with geometric operations and for machine tool path planning. Problems of finite-precision geometry and machining tolerances. Introduction to some rapid prototyping techniques such as Free-Form Fabrication and NC machining. Other advanced topics and recent developments in the field. Sequin

286. Implementation of Data Base Systems. (3) Three hours of lecture per week. Prerequisites: 162 and 186. Implementation of data base systems on modern computer hardware systems. Considerations concerning operating system design, including buffering, page size, prefetching, etc. Query processing algorithms, design of crash recovery and concurrency control systems. Implementation of distributed data bases and data base machines. Hellerstein


288. Artificial Intelligence Approach to Natural Language Processing. (3) Three hours of lecture per week plus programming assignment. Prerequisites: 164. Representation of conceptual structures, language analysis and production, models of inference and memory, high-level text structures, question answering and conversation, machine translation. Klein, Malik

289. Knowledge Representation and Use in Computers. (3) Three hours of lecture per week. Prerequisites: 188 or equivalent. Fundamentals of knowledge representation and use in computers. Predicate calculus, probability and Bayes theory, and their use in capturing commonsense and expert knowledge. Theorem-provers, planning systems belief networks and influence diagrams as reasoning machinery. Integrated architectures for intelligent agents. A project will be a programming exercise. Russell

C293A. Vision A: Quantitative, Perceptual, and Physiological Aspects. (2) Three hours of lecture per week for seven and one-half weeks. Prerequisites: Consent of instructor. The course will present basic mathematical models of the retina and visual pathways, psychophysical measurement techniques, sensory interactions, and the estimation of disparity and motion. Introduction to front-end visual processing in mammalian visual system. Basic optics, anatomy and physiology of retina, lateral geniculate nucleus, and primary visual cortex. Psychophysics of color, light and dark adaptation, space frequency, spatial contrast sensitivity, spatialtemporal contrast sensitivity, motion and disparity measurement. Connections between psychophysics and physiology. Relevant modeling techniques such as linear systems theory, and information. The theory will be introduced and applied. There will be an accompanying laboratory which the students can register for separately. Also listed as Psychology C215A, Vision Science C290A, and Molecular and Cell Biology C264A.

C293B. Vision B: Quantitative, Perceptual, and Physiological Aspects. (2) Three hours of lecture per week for seven and one-half weeks. Prerequisites: Consent of instructor. The course will present basic material on inferring 3d from visual information. This will include disparity, motion, texture, shading, and occlusion. Introduction to the psychophysics and mathematical analysis underlying the inference of 3d scene properties from 2d retinal images. Psychophysics of various cues to 3d shape and spatial layout such as texture, contour, shading, stereopsis, and structure from motion. Geometrical analysis of these cues. Probabilistic theory for optimal combination of cues and estimation of depth. Material on material on inferring 3d from visual information. This will include disparity, motion, texture, shading, and occlusion. Introduction to the psychophysics and mathematical analysis underlying the inference of 3d scene properties from 2d retinal images. Psychophysics of various cues to 3d shape and spatial layout such as texture, contour, shading, stereopsis, and structure from motion. Geometrical analysis of these cues. Probabilistic theory for optimal combination of cues and estimation of depth.

C293C. Vision C: Perceptual Organization. (2) Three hours of lecture per week for seven and one-half weeks. Prerequisites: Consent of instructor. The course will cover "mid-level" visual processing, including the perception of objects, their properties, and the determination of part-whole structure from optical images. The course will be divided into two main parts, including material from psychophysics, classical perception psychology, computational modeling, and neuroscience. Specific topics include perception of color, texture, depth, orientation, pattern, fixations, retinal and amodal completion, and part-whole structure. Also listed as Molecular and Cell Biology C264C, Vision Science C290C, and Psychology C215C.

C293D. Vision D: High-Level Vision. (2) Three hours of lecture per week for seven and one-half weeks. Prerequisites: Consent of instructor. This course will cover "high-level" visual processing, including object recognition, visual attention, visual memory, visual imagery, and visual awareness. The approach will be interdisciplinary, including material from psychophysics, classical perceptual psychology, computational modeling and neuroscience. Also listed as Molecular and Cell Biology C264D, Vision Science C290D, and Psychology C215D.

C293L. Vision Laboratory: Quantitative, Perceptual, and Physiological Aspects. (1) Course may be repeated for credit. One hour of laboratory per week for seven and one-half weeks. Prerequisites: Consent of instructor. Quantitative analysis of psychophysical properties of spatial, color, temporal and binocular vision, motion sensitivity and adaptation and their underlying physiological mechanisms. Also listed as Psychology C215L, Vision Science C290L, and Molecular and Cell Biology C264L.

294. Special Topics. (1-4) Course may be repeated for credit. Topics will vary from semester to semester. See Computer Science Division announcements. (F,SP) Staff

297. Field Studies in Computer Science. (1-12) Course may be repeated for credit. Independent study. Must be taken on a satisfactory/unsatisfactory basis. Prerequisites: Consent of instructor. Discussion, problem review and development, guidance of computer science laboratory sections, course development, supervised practice teaching. (F,SP) Staff

Interdepartmental Studies Courses

Upper Division Courses

IDS 100AC. Technology and the American Experience. (4) Three hours of lecture and one hour of discussion per week. The history of technology in America and the place of technology in the experience, philosophy, and culture of different American groups. The technological practices and attitudes of Native Americans and of European Americans before 1700. Technological clashes, transfers, and dialogues between different American Cultures. Technology and the republic and pastoral ideals. The relationship of slavery and technology. The industrial and agricultural revolutions: winners and losers. Immigration and technological progress in the 20th century. Digital technology and the global village. Sponsorship of American Engineer-
Endocrinology
(College of Letters and Science)

Group Office: 3606 Valley Life Sciences Building, (510) 642-1640
endo.berkeley.edu
Chair: Gary L. Firestone, Ph.D.

Professors
*Gary Firestone, Ph.D. Molecular endocrinology; hormonal control of cell growth and differentiation (Cell and Developmental Biology)

Stephen E. Glickman, Ph.D. Neural and endocrine bases of species-specific behavior (Integrative Biology)

Tyronne B. Carter, Ph.D. Amphibian developmental endocrinology (Integrative Biology)

Marc Helleman, Ph.D. Multicellular metabolic processes (Nutritional Science and Toxicology)

Sahylabara Nandl, Ph.D. Hormones and growth (Developmental Biology)

Hsien-Sock Su, Ph.D. Hormonal regulation of lipid metabolism and adipocyte differentiation (Nutritional Science and Toxicology)

Irving I. Zucker, Ph.D. Seasonal reproductive cycles; biological clock; neuroendocrine-behavior relations (Psychology)

Howard A. Bern, Ph.D. (Emeritus) Comparative endocrinology; neurosecretion; hormones and cancer (Integrative Biology)

Paul Lich, Ph.D. (Emeritus) Control of endocrine cycles in reptiles; evolution of pituitary hormones (Integrative Biology)

Paola S. Emirao, M.D. Ph.D. (Emeritus) Neuroendocrinology, development, and aging (Cell and Developmental Biology)

David L. Wood, Ph.D. (Emeritus) Pheromones and host-selection behavior of forest insects (Environmental Science, Policy, and Management)

Adjunct Professors
Ashok Gadgil, Ph.D. UC Berkeley, Lawrence Berkeley National laboratory, innovative technologies

Thomas E. McKone, Ph.D. (Public Health)

David Rolland-Holtz, (Public and Resource Economics)

Kenneth Train, Ph.D. (Economics)

Adjunct Assistant Professor
Margaret Tom, Ph.D. UC Berkeley, Lawrence Berkeley National laboratory, land use and climate change

Professors
Miquel A. Aliier, Ph.D. (Environmental Science, Policy, and Management)

Edward Arens, Ph.D. (Architecture)

David Auslander, S.C.D. (Mechanical Engineering)

Steven Bessinger, Ph.D. (Environmental Science, Policy, and Management)

Charles Birdsal, Ph.D. (Environmental Science, Policy, and Management)

Seymour Borenstein, Ph.D. (Haas School of Business)

Gail Schiller Brager, Ph.D. (Architecture)

Eric Brewer, Ph.D. (Electrical Engineering and Computer Science)

Elton Cairns, Ph.D. (Chemical Engineering)

David Caron, J.D. (Environmental Design)

Robert Cervero, Ph.D. (Environmental Science, Policy, and Management)

Anthony Fisher, Ph.D. (Agricultural and Resource Economics)

Louise Fortmann, Ph.D. (Environmental Science, Policy, and Management)

Kenneth Fowler, Ph.D. (Nuclear Engineering)

Harrison Fraser Jr., Ph.D. (Environmental Design)

David Freedman, Ph.D. (Statistics)

Irrez Fung, Ph.D. (Center for Atmospheric Sciences)

Wayne M. Getz, Ph.D. (Environmental Science, Policy, and Management)

Allen Goldstein, Ph.D. (Environmental Science, Policy, and Management)

Robert Harley, Ph.D. (Civil and Environmental Engineering)

Gillian Hart, Ph.D. (Geography)

Tyrone Hayes, Ph.D. (Integrative Biology)

Alexander Horne, Ph.D. and Environmental Engineering

Judith Innes, Ph.D. (City and Regional Planning)

Kenneth Jowitt, Ph.D. (Political Science)

Robert Kagan, Ph.D. (Political Science)

Wayne M. Kastenberg, Ph.D. (Nuclear Engineering)

Jim Krchnar, Ph.D. (Earth and Planetary Science)

Jean Lave, Ph.D.

Allan Lichtenberg, Ph.D. (Electrical Engineering and Computer Science)

Carolyn Merchant, Ph.D. (Environmental Science, Policy, and Management)

Michael Nacht, Ph.D. (Geography)

Laura Nader, Ph.D. (Anthropology)

Nancy Petusoff, Ph.D. (Environmental Engineering)

Per Peterson, Ph.D. (Nuclear Engineering)

Thomas (Zack) Powell, Ph.D. (Integrative Biology)

Mary Power, Ph.D. (Biological Engineering)

Robert Price, Ph.D. (Political Science)

Jeffrey Romm, Ph.D. (Environmental Science, Policy, and Management)

Robert Sawyer, Ph.D. (Mechanical Engineering)

Joseph Sax, J.D. (Law)

Anita Saxsenra, Ph.D. (City and Regional Planning)

Orville Schell, Ph.D. (Journalism)

Whitney Silver, Ph.D. (Environmental Science, Policy, and Management)

Ellen Simms, Ph.D. (Integrative Biology)

Kim Smith, Ph.D. (Public Health)

Robert Spear, Ph.D. (Public Health)

David Teence, Ph.D. (Business Administration)

Prayun Varaiya, Ph.D. (Electrical Engineering and Computer Sciences, Economics)

David Vogel, Ph.D. (Business, Public Policy)

Jasmina Vujic, Ph.D. (Environmental Science, Policy, and Management)

Michael Watts, Ph.D. (Geography)

Ecke Weber, Ph.D. (Materials Science and Engineering)

Steven Werner, Ph.D. (Lawrence Berkeley National Laboratory)

Oliver Williamson, Ph.D. (Business Economics, Law)

Brian D. Wright, Ph.D. (Agricultural and Resource Economics)

Paul Wright, Ph.D. (Mechanical Engineering)

John HOLDREN, Ph.D. (Engineering and Public Policy)

C. Bart McGuire, Ph.D. (Public Policy)

Associate Professors
Joonhong Ahn, Ph.D. (Nuclear Engineering)

Christopher Ansell, Ph.D. (Political Science)

Susan Anderson, Ph.D. (Environmental Science, Policy, and Management)

Cynthia Carson, Ph.D. (History)

Ignacio H. Chapeta, Ph.D. (Environmental Science, Policy, and Management)

Elizabeth Deakin, Ph.D. (City and Regional Planning)

Timothy Doherty, Ph.D. (Lawrence Berkeley National Laboratory)

Lyn Huntting, Ph.D. (Environmental Science, Policy, and Management)

G. Mathis Kondolf, Ph.D. (City and Regional Planning)

Kate O’Herrl, Ph.D. (Environmental Science, Policy, and Management)

Dara O’Rourke, Ph.D. (Environmental Science, Policy, and Management)

Christine Rosen, Ph.D. (Business)

Catherine Wolfram, Ph.D. (Business)

Assistant Professors
Elizabeth Boyer, Ph.D. (Environmental Science, Policy, and Management)

Jamie Cala, Ph.D. (Molecular and Cell Biology)

Arpad Horvath, Ph.D. (Civil and Environmental Engineering)

Ann Keller, Ph.D. (Public Health)

Claire Kremen, Ph.D. (Environmental Science, Policy, and Management)

Karen Nelson, Ph.D. (Civil and Environmental Engineering)

Margaret Taylor, Ph.D. (Public Policy)

David Wiscull, Ph.D. (Environmental Science, Policy, and Management)

Research Affiliates
William Ahern (California State Coastal Conservancy)

Susan Anderson, Ph.D. (Integrative Biology)

Sally Benson (Lawrence Berkeley National Laboratory)

Samuel Berman, Ph.D. (Lawrence Berkeley National Laboratory)

Carl Blummisen, Ph.D. (University of California Energy Institute)

Ted Bradshaw, Ph.D. (University of California, Davis)

Nancy Brown, Ph.D. (Lawrence Berkeley National Laboratory)

Robert Buxton, Ph.D. (Future Resources Associates)

John Busch, Ph.D. (Lawrence Berkeley National Laboratory)

Jim Christensen, Ph.D. (Lawrence Berkeley National Laboratory)

Carla D’Antonio, Ph.D. (University of California, Santa Barbara)

Nancy Erman, Ph.D. (Conservation Biology, University of California, Davis)

Mark Fisher, Ph.D. (Lawrence Berkeley National Laboratory)

Karin Godbess, Ph.D. (Environmental Studies, California State University East Bay)

Peter Gleick, Ph.D. (Pacific Institute for Studies in Development, Environment, and Security)

Brent Haddad, Ph.D. (Environmental Studies, University of California, Santa Cruz)

Charles Hartman, Ph.D. (Lawrence Livermore National Laboratory)

Richard Howarth, Ph.D. (Dartmouth College)

Edward Kahn, Ph.D. (National Economics Research Associates)

Jonathan G. Koomey, Ph.D. (Lawrence Berkeley National Laboratory)

Alan Lamont, Ph.D. (Lawrence Berkeley National Laboratory)

Michael Lederer, Ph.D. (University of California Energy Institute)

Mark Levin, Ph.D. (Lawrence Berkeley National Laboratory)

Ronnie Lipschutz, Ph.D. (National Economics Research Associates)

Donald Lucas, Ph.D. (Lawrence Berkeley National Laboratory)

Manuel Lopez, Ph.D. (San Francisco State University)

Jim McMahon (Lawrence Berkeley National Laboratory)

Alan K. Meier, Ph.D. (Lawrence Berkeley National Laboratory)

Anthony V. NERO, Ph.D. (Lawrence Berkeley National Laboratory)

Margaret Race, Ph.D. (NASA/SETI Institute)

G. Mathis Kondolf, Ph.D. (Lawrence Berkeley National Laboratory)

Lee Schipper, Ph.D. (Lawrence Berkeley National Laboratory)

Edward Vine, Ph.D. (Lawrence Berkeley National Laboratory)

The Graduate Program
The faculty associated with the program leading to the M.A. and the Ph.D. in endocrinology have diverse interests representing endocrinology in the broadest sense: chemical mediators in the living world (autocrine, paracrine, endocrine and other hormonal factors), with approaches from molecular and cellular endocrinology through organismal and comparative endocrinology to chemical ecology.

Students who plan to work for higher degrees in endocrinology at Berkeley will be guided by a graduate advisor and by the professor (mentor) who directs their research. The graduate advisor and mentor will ascertain whether students have met the minimum requirements, will recommend to prospective committees the additional courses to take, will decide with them the fields to be covered in the qualifying examinations, and will act generally in an advisory capacity. The candidates are expected to have completed an undergraduate major in one of the following areas of animal biology leading to the B.A. or B.S. degree.

To advance to candidacy for the Ph.D., students must complete all requirements (information can be obtained from the graduate advisor or at the office given above), including passing of an oral qualifying examination.

Energy and Resource Group
(Special Studies)

Department Office: 310 Barrows Hall, (510) 642-1640
socrates.berkeley.edu
Chair: William Nazaroff, Ph.D.

Professors
John Harte, Ph.D. University of Wisconsin. Ecology, climate, biodiversity

Daniel Kammen, Ph.D. Harvard University. Energy, society, development, environmental policy

Richard Norgaard, Ph.D. University of Chicago. Ecological economics, environmental epistemology, sustainable science

Gene I. Rochlin, Ph.D. (Emeritus) (Energy and Resources Group)

Assistant Professors
Alexander E. Farrell, Ph.D. University of Pennsylvania. Energy and environmental policy, sustainability

Isha Ray, Ph.D. Stanford University. Water, development, common property resources
Program Overview

The Energy and Resources Group (ERG) is an interdisciplinary academic unit of the University of California at Berkeley, conducting programs of graduate teaching and research that treat issues of energy, resources, development, health, and the environmental, biological diversity, economic justice, governance, and the political, social, and cultural contexts of changing and new approaches to thinking about economics and consumption. ERG offers two-year M.A. and M.S. degrees in Energy and Resources, as well as a Ph.D. and an undergraduate minor.

Faculty. The faculty of ERG consists of six professors of Energy and Resources plus some 100 other affiliated faculty members whose main appointments are within five colleges and four of the schools of the Berkeley campus, as well as the University’s Lawrence Berkeley and Lawrence Livermore national laboratories. The chair is normally drawn on a rotating basis from the affiliated faculty.

Students. There are approximately 60 graduate students enrolled in ERG degree programs, about half of them doctoral candidates. The students come from a wide variety of backgrounds—engineering, social sciences, natural sciences, and humanities. The characteristics they have in common are an interest in interdisciplinary approaches to energy and resource issues and the intellectual credentials to survive a highly competitive admissions process. The first-year training at ERG in the technological, environmental, economic, and sociopolitical dimensions of energy and resource issues while pursuing additional coursework and individual research tailored to their interest and backgrounds.

Graduates. ERG graduates are employed across the U.S. and around the world in universities, governmental and international agencies, legislative staff positions, public utilities, and private utilities, other energy and resource companies, consulting firms, and public-interest organizations.

Undergraduate Courses. ERG now offers an undergraduate minor in the field of Energy and Resources. Undergraduate courses in ERG deal with the essence of energy and resource issues on both a national and global level in their technical, environmental, sociopolitical and economic aspects, and they provide both basic surveys of the field and introductory training in interdisciplinary research methods. There are no prerequisites for enrollments in the courses unless specifically noted otherwise in the descriptions below.

Graduate Courses. The graduate courses in ERG provide factual, analytical, and personal perspectives and are designed for graduate students who want to explore an intellectual topic with a faculty member in a small-seminar setting. Freshman Seminars are offered in all campus departments, and topics may vary from department to department and semester to semester. (F,SP)

84. Sophomore Seminar. (1,2) Course may be repeated for credit as topic varies. One hour of seminar per week per unit for 15 weeks. One and one-half hours of seminar per week per unit for 10 weeks. Two hours of seminar per week per unit for eight weeks. Three hours of seminar per week per unit for five weeks. Sections 1-2 to be graded on a passed/not passed basis. Sections 3-4 to be graded on a letter-grade basis. Freshman Seminars have been designed to provide new students with the opportunity to

Admission.

Applications are considered once a year for fall semester admission only. Continuing students may be recommended for admission to the Ph.D. program upon completion of their master’s work.

Further Information. Contact the Energy and Resources Group, 310 Barrows Hall #3050, University of California, Berkeley, CA 94720-3050; (510) 642-1640. Web site: socrates.berkeley.edu/erg.

Lower Division Courses

24. Freshman Seminar. (1) Course may be repeated for credit as topic varies. One hour of seminar per week per unit. Three sections 3-4 to be graded on a letter-grade basis. Sections 3-4 to be graded on a passed/not passed basis. 

Cprefix=language course for business majors Cprefix=cross-listed course Hprefix=honors course

Bprefix=course satisfies R&C requirement ACprefix=course satisfies American Cultures requirement

Rprefix=course satisfies R&C requirement

†Recipient of Distinguished Teaching Award

Energy and Resources Group / 245

Department of Energy

151. Politics of Energy and Environmental Policy. (4) Three hours of lecture and one hour of discussion per week. Prerequisites: Graduate standing; some coursework in social science and technical areas. How existing agencies and policy makers incorporate new concerns into their deliberations, and how the advocacy given these new concerns seek to fold their priorities into the existing institutional and policy structures. (F,SP) Staff

170. Environmental Classics. (3) Three hours of seminar per week. Prerequisites: Upper division standing. Motivation: What is the history and evolution of environmental thinking and writing? How have certain “environmental classics” shaped the way in which we think about nature, society, and development? This course will use a selection of 20th-century books and essays that have had a major impact on our current thinking and to address the newer issues of our time. (F) Kirchner

C180. Ecological Economics in Historical Context. (3) Three hours of lecture and one hour of discussion per week. Prerequisites: Economics 100A or equivalent. Economists through history have explored ecological and environmental issues, from growth, what constitutes the good life, and how economic justice can be assured. Yet economists continue to use measures and models that simplify these issues and promote bad outcomes. Ecological economics responds to this tension between the desire for simplicity and the multiple perspectives needed to understand complexity in order to move toward sustainable, fulfilling, just economies. Also listed as Environmental Economics and Policy C180. (SP) Norgaard

190. Seminar in Energy, Environment, Development and Security Issues. (3) Course may be repeated for credit. One to three hours of lecture per week. Prerequisites: Upper division standing and consent of instructor. Critical analysis of specific issues or general problems of how people interact with environmental and resource systems. More than one section may be given each semester on different topics depending on faculty and student interest. (F,SP) Staff

198. Directed Group Studies for Advanced Undergraduates. (1-4) Course may be repeated for credit. Hours to be arranged. Must be taken on a passed/not passed basis. Prerequisites: Upper division standing and consent of instructor. Group studies of selected topics. (F,SP) Staff

199. Supervised Independent Study and Research. (1-4) Course may be repeated for credit. Hours to be arranged. Must be taken on a passed/not passed basis. Prerequisites: Enrollment restricted by regulations of the General Catalog. Individual conferences. (F,SP) Staff

Graduate Courses

200N. Energy and Society. (4) Three hours of lecture and one hour of discussion per week. Prerequisites: Graduate standing. Formerly 200. Energy sources, uses, and impacts; an introduction to the technology, politics, economics, and environmental interactions of energy in contemporary society. Energy and well-being. Topics will correspond to classroom topics and discussions focusing on topics of interest that vary from semester to semester.

Upper Division Courses

100. Energy and Society. (4) Three hours of lecture and one hour of discussion per week. Energy sources, uses, and impacts: an introduction to the technology, politics, economics, and environmental effects of energy in contemporary society. Energy and well-being. Energy in international perspective, origins, and character of energy crisis. (F) Kammen, Farrell

102. Quantitative Aspects of Global Environmental Problems. (4) Three hours of lecture and one hour of discussion per week. Prerequisites: B prefix=course satisfies R&C requirement

3050; (510) 642-1640. Web site: socrates.berkeley.edu/erg.

104. Energy and Technology: Technology and Social Systems. (4) Three hours of lecture and one hour of discussion per week. Energy and technology: a view of society as a social system. Topics of special interest will be presented in lecture. Also listed as Environmental Studies C120. (F) Kirchner

105. Energy Technology: Technology and Social Systems. (4) Three hours of lecture and one hour of discussion per week. Energy and technology: a view of society as a social system. Topics of special interest will be presented in lecture. Also listed as Environmental Studies C120. (F) Kirchner

107. Energy Technology: Technology and Social Systems. (4) Three hours of lecture and one hour of discussion per week. Energy and technology: a view of society as a social system. Topics of special interest will be presented in lecture. Also listed as Environmental Studies C120. (F) Kirchner

108. Energy Technology: Technology and Social Systems. (4) Three hours of lecture and one hour of discussion per week. Energy and technology: a view of society as a social system. Topics of special interest will be presented in lecture. Also listed as Environmental Studies C120. (F) Kirchner

109. Energy Technology: Technology and Social Systems. (4) Three hours of lecture and one hour of discussion per week. Energy and technology: a view of society as a social system. Topics of special interest will be presented in lecture. Also listed as Environmental Studies C120. (F) Kirchner

110. Energy Technology: Technology and Social Systems. (4) Three hours of lecture and one hour of discussion per week. Energy and technology: a view of society as a social system. Topics of special interest will be presented in lecture. Also listed as Environmental Studies C120. (F) Kirchner

111. Energy Technology: Technology and Social Systems. (4) Three hours of lecture and one hour of discussion per week. Energy and technology: a view of society as a social system. Topics of special interest will be presented in lecture. Also listed as Environmental Studies C120. (F) Kirchner

112. Energy Technology: Technology and Social Systems. (4) Three hours of lecture and one hour of discussion per week. Energy and technology: a view of society as a social system. Topics of special interest will be presented in lecture. Also listed as Environmental Studies C120. (F) Kirchner

113. Energy Technology: Technology and Social Systems. (4) Three hours of lecture and one hour of discussion per week. Energy and technology: a view of society as a social system. Topics of special interest will be presented in lecture. Also listed as Environmental Studies C120. (F) Kirchner

114. Energy Technology: Technology and Social Systems. (4) Three hours of lecture and one hour of discussion per week. Energy and technology: a view of society as a social system. Topics of special interest will be presented in lecture. Also listed as Environmental Studies C120. (F) Kirchner

115. Energy Technology: Technology and Social Systems. (4) Three hours of lecture and one hour of discussion per week. Energy and technology: a view of society as a social system. Topics of special interest will be presented in lecture. Also listed as Environmental Studies C120. (F) Kirchner

116. Energy Technology: Technology and Social Systems. (4) Three hours of lecture and one hour of discussion per week. Energy and technology: a view of society as a social system. Topics of special interest will be presented in lecture. Also listed as Environmental Studies C120. (F) Kirchner
201. Interdisciplinary Analysis in Energy and Resources. (4) Three hours of lecture per week. Prerequisites: Open to ERG graduate students only or consent of instructor. Introduction to interdisciplinary analysis as it is practiced in the ERG. Most of the course consists of important perspectives on energy and resource issues, introduced through a particularly influential paper. The course provides an introduction to the current research activities of the ERG faculty as well as practical knowledge and skills necessary to successfully complete graduate school in an interdisciplinary program. (F) Farrell

C202. Modeling Ecological and Meteorological Phenomena. (3) Three hours of lecture per week. Prerequisites: 102 or consent of instructor. Modeling methods in ecology and meteorology; stability analysis; effects of anthropogenic stress on natural systems. Also listed as Environ Sci, Policy, and Management C211 and Integrative Biology C211. (Harte)

C205. Quantitative Methods for Ecological and Environmental Modeling. (3) Three hours of lecture per week. Prerequisites: Consent of instructor. This course will review the background mathematical and statistical tools necessary for students interested in pursuing ecological and environmental modeling. Topics include linear algebra; difference equation, ordinary differential equation, and partial differential equation models; stochastic processes; parameter estimation; and a number of other topics. This course is recommended as a prerequisite for advanced modeling courses in Integrative Biology, Energy and Resources Group, Environmental Science, Policy, and Management as well as Environ. Policy and Management C205 and Integrative Biology C205. (F) Staff

220. Modeling Energy, Environmental, and Resource Systems. (3) Three hours of lecture and one hour of discussion per week. Prerequisites: Understanding linear algebra and first-semester calculus (Math 54 or equivalent). Limited to seniors and graduate students. A first course in modeling with an emphasis on optimization and on applications in energy, environment, and resource management. Readings, lectures, homework, and small projects will be used to help understand the role of modeling in exploring a variety of questions associated with energy and resource issues. Course is based in Excel, both the native Solver module and the more powerful add-in OpOptQuest that is included with the textbook, so each student will be able to apply the learned skills in a wide variety of potential research and work environments. Goals: the student will be able to: (1) articulate a problem and a modeling perspective, formulate the appropriate mathematical programming model to examine the problem, solve the model, and interpret the results. Course provides the foundation for a course on computational modeling but does not cover algorithm implementations. Farrell

C226. Photovoltaic Materials; Modern Technologies in the Context of a Growing Renewable Energy Market. (3) Three hours of lecture per week. Prerequisites: Material Science and Mineral Engineering 111 or 123 or equivalent. Should have a firm foundation in electronic and optical props of semiconductors and basic semiconductor device physics. This technical course focuses on the fundamentals of photovoltaic energy conversion with respect to the materials and device physics. The course is designed to introduce the fundamental scientific principles of semiconductors and solar cell devices. The course aims to equip students with the concepts and analytical skills necessary to assess the utility and viability of various modern photovoltaic technologies in the context of a growing global renewable energy market. Also listed as Materials Science and Engineering C226. (F) Kam, Hanner

251. The Political Economy of Energy. (3) Three hours of lecture per week. Prerequisites: Some familiarity with present critical problems in energy policy and at least a broad general understanding of relevant technological and economic issues. Emphasis on the political economy of energy policies, emphasizing the appropriate and actual roles of state and federal governments. Emphasis on how and why to apply various theoretical and methodological tools of the social sciences to policy-making in technical issue areas. Staff

254. Electric Power Systems. (3) Three hours of lecture per week. Prerequisites: Physics 7B or 8B or equivalent. Provides an understanding of concepts in the design and operation of power systems, including generation, transmission, and consumption. Covers basic electromechanical physics, reactive power, circuit and load analysis, reliability, planning, dispatch, organizational design, regulations, environment, end-use efficiency, and new technologies. (SP) Farrell

270. Environmental Classics. (3) Three hours of seminar per week. Prerequisites: Graduate standing. Motivation: What is the history and evolution of environmental thinking and writing? How have certain “environmental classics” shaped the way in which we think about nature, society, and development? This course will use a selection of 20th-century books and papers that have had a major impact on academic and wider public thinking about the environment and development to probe these issues. The selection includes works and commentaries related to these works that question and challenge the depictions of the United States and as well as in the developing world. Through the classics and their critiques, reviews, and commentaries, the class will explore the evolution of thought on these transforming ideas. (F) Kammen, Ray

273. Research Methods in Social Sciences. (3) Three hours of lecture per week. Prerequisites: Graduate standing or consent of instructor. This course aims to introduce graduate students to the rich diversity of research methods that social scientists have developed for the empirical analysis of their work. Its primary goal is to encourage critical thinking about the research process: how we “know,” how we match research methods to research questions, how we design and conduct our information/data collection, what we assume explicitly and implicitly, and the ethical dilemmas raised by fieldwork-oriented studies. (SP) Ray

275. Water and Development. (3) Three hours of seminar per week. This class is an interdisciplinary graduate seminar for students of water policy in development. It will develop skills and practices of development through the “lens” of water. Rather, it is a seminar motivated by the fact that over 1 billion people in developing countries have no access to safe water, 3 billion people have sanitation facilities, and many millions of small farmers do not have reliable water supplies to ensure a healthy crop. Readings and discussions will cover: the problems of water access and sanitation; the potential benefits of technological, social, and economic solutions to these problems; the role of institutions in access to water and sanitation; and the pitfalls of and assumptions behind some of today’s popular “solutions.” (F) Ray

290. Seminar in Energy and Resources. (1-3) Three to nine hours of seminar per week. Prerequisites: Graduate standing in Energy and Resources Group or consent of instructor. Graduate student presentations and faculty-student discussions of advanced topics in energy and resources. Specific topics vary according to faculty and student interest. (F,SP) Staff

291. Special Topics in Energy and Resources. (1-3) Course may be repeated for credit. One to three hours of lecture per week. Prerequisites: Consent of instructor. Topics include topics of relevance of advanced topics in energy and resources using interdisciplinary approaches. Specific topics vary according to faculty and student interest. Offered even-numbered years. (F,SP) Staff

292A. Tools of the Trade. (2) Two hours of lecture per week. Must be taken on a satisfactory/unsatisfactory basis. Prerequisites: Consent of instructor. Statistical software and methods for analyzing data. Topics include linear algebra, differential equations, statistical methods, probability, mathematical theory, and thermodynamics. (F) Staff

292B. Tricks of the Trade. (2) Two hours of lecture per week. Must be taken on a satisfactory/unsatisfactory basis. Prerequisites: Open to ERG graduate students only. An introduction to a profession in interdisciplinary research, including such topics as organizing time and information, selecting and defining research problems, conducting research, writing skills, oral presentations, getting published, getting funded, finding employment. (SP) Staff

292C-292D. Master’s Project Seminar. (2;2) Two hours of seminar per week. Credit and grade to be awarded on completion of sequence. Required of second-year ERG graduate students. Topics include the adoption of a research project, research design, presentation of work, statistical analyses. Students will apply the interdisciplinary methods, skills and perspectives learned in the core curriculum. Sequence begins fall each year. Credit and grade to be awarded upon completion of the full sequence. (F,SP) Staff

C293A. Technology and Sustainability. (2) One and one-half hours of lecture per week and one and one-half hours of discussion per week. Prerequisites: Consent of instructor. Formerly 298. Lectures, reports, and discussions on current research in energy and resources. Particular emphasis on topics of research interest for current Ph.D. students in the Energy and Resources Group. (F,SP) Staff

295. Special Topics in Energy and Resources. (1) Course may be repeated for credit. One and one-half hours of lecture per week. Must be taken on a satisfactory/unsatisfactory basis. Prerequisites: Consent of instructor. Formerly 298. Lectures, reports, and discussions on current research in energy and resources. Particular emphasis on topics of research interest for current Ph.D. students in the Energy and Resources Group. (F,SP) Staff

296. Doctoral Seminar. (2) Course may be repeated for credit. Two hours of section per week. Must be taken on a satisfactory/unsatisfactory basis. Prerequisites: Consent of instructor. Formerly 298. Lectures, reports, and discussions on current research in energy and resources. Particular emphasis on topics of research interest for current Ph.D. students in the Energy and Resources Group. (F,SP) Staff

298. Doctoral Seminar. (2) Course may be repeated for credit. Two hours of section per week. Must be taken on a satisfactory/unsatisfactory basis. Prerequisites: Consent of instructor. Lecturers, reports, and discussions on current research in energy and resources. Sections are operated independently and under direction of different staff. (F,SP) Staff

298N. Directed Group Study. (1-3) Course may be repeated for credit. One to three hours of directed group study per week. Must be taken on a satisfactory/unsatisfactory basis. Prerequisites: Graduate standing and consent of instructor. Informal group studies of special problems in energy and resources. (F,SP) Staff

299. Individual Research in Energy and Resources. (1-12) Course may be repeated for credit. Variable. Prerequisites: Graduate standing. Investigation of problems in energy and resources from an interdisciplinary perspective. (F,SP) Staff

602. Individual Study for Doctoral Students. (1-8) Course may be repeated for credit. Individual study. Must be taken on a satisfactory/unsatisfactory basis. Prerequisites: Consent of instructor. Individual study on consultation with the major advisor, intended to provide an opportunity for qualified students to prepare themselves for the various exams required of candidates for the Ph.D. (F) Staff

Professional Courses

301. Graduate Student Instructor Practicum. (3) Course may be repeated for credit. Two hours of seminar per week. Must be taken on a satisfactory/unsatisfactory basis. Prerequisites: Appointment as a grad-
Engineering

(Course of Engineering)

Office of the Dean: 320 McLaughlin Hall, (510) 642-7594 www.coe.berkeley.edu
Acting Dean: Fiona M. Doyle, Ph.D.
Associate Deans:
Flora Ng, Executive Associate Dean, Academic Affairs
Gary Baldwin, Ph.D. (Industry Relations)
David Dornfeld, Ph.D. (Interdisciplinary Studies)
George Johnson, Ph.D. (Special Programs)
Thomas Kallik (Science and Technology)
George Leitmann, Ph.D. (International Relations)
Lisa Pruitt, Ph.D. (Virtual Learning and Outreach Education)
Carlo Setti, Ph.D. (Capital Projects)
Costas Spanos, Ph.D. (Research)

Overview of the College

The College of Engineering consists of seven departments and an interdisciplinary studies program. Each department has its own faculty, set of courses, fields of specialization, and curriculum requirements. The seven departments offer programs leading to bachelor’s, master’s, and graduate degrees. Each department with its degree programs is listed separately in alphabetical order in this catalog.

The college includes the following departments:

• Bioengineering
• Civil and Environmental Engineering
• Electrical Engineering and Computer Science
• Industrial Engineering and Operations Research
• Materials Science and Engineering
• Mechanical Engineering
• Nuclear Engineering

Additional programs are:

• Applied Science and Technology Graduate Group
• Bioengineering Graduate Group
• Engineering—Joint Majors
• Engineering Science
• Engineering—Undeclared
• Management of Technology
• Manufacturing Engineering
• Studies in Engineering, Science, and Mathematics Education (SESAME)

Additional sections of interest are:

• Chemical Engineering (part of the College of Chemistry)
• Computer Science (part of the College of Letters and Science)
• Engineering courses (multidisciplinary courses that are broader in scope than those offered by a single discipline and are of interest primarily to students in the College of Engineering, regardless of their department affiliation)
• Engineering—Interdisciplinary Studies (includes information on the Management of Technology Program)
• Interdepartmental Studies courses

Undergraduate Programs

The college offers programs in a wide variety of engineering fields. These programs are based on the concept that an engineer must be well grounded in the sciences, humanities, and social studies and have full command of the principles and practices of the engineering profession.

Accredited four-year undergraduate programs are offered in the following professional fields: civil engineering, electrical and computer engineering, computer science and engineering, industrial engineering and operations research, materials science and engineering, mechanical engineering, and nuclear engineering. These programs, with the exception of computer science and engineering, are accredited by the Engineering Accreditation Commission of the Accreditation Board for Engineering and Technology (ABET), 111 Market Place Suite 1050, Baltimore, MD 21202-4012; Telephone: (410) 347-7700. Computer science and engineering is accredited by the Computing Accreditation Commission of ABET. Programs are also offered in bioengineering and manufacturing engineering. Each of the curricula is administered by a department within the college and each emphasizes a core program of science and engineering subjects related to the particular field. In addition, there is a curriculum in engineering sciences with programs in computational engineering science, engineering mathematics and statistics, engineering physics, and environmental engineering sciences. Entering freshmen may apply for admission to an engineering—undeclared option. The college offers six joint major programs. These are nuclear engineering or materials science and engineering combined with either mechanical engineering or electrical engineering and computer sciences; and materials science and engineering combined with either bioengineering or nuclear engineering. In addition to these six programs, joint major programs in chemical engineering combined with materials science and engineering or nuclear engineering are offered jointly by the College of Chemistry and the College of Engineering.

Degree Requirements. Engineering students must fulfill University of California, Berkeley campus, and College of Engineering requirements to graduate. The unit requirement for the bachelor’s degree is normally 120 semester units, within which the student is expected to satisfy graduation requirements. This minimum may be exceeded for valid reasons. To exceed 125 units, prior approval of the dean is required for registration.

Admission Requirements. Entering freshmen should have completed the following subjects:

High School Subjects and Number of Years:
History/Social Science—required
English—required
Mathematics—required
Laboratory Science—required
Physics—required

Visual and Performing Arts—optional
Language other than English—required
College preparatory electives—optional

Graduate Programs

Graduate programs are offered leading to the Master of Science and Doctor of Philosophy degrees for study emphasizing engineering and applied sciences; and Master of Engineering and Doctor of Engineering degree programs emphasizing advanced professional studies in design development. Fields of study include bioengineering, civil and environmental engineering, electrical engineering and sciences, computer science and engineering and operations research, materials science and engineering, mechanical engineering, nuclear engineering, fluid mechanics, and applied mechanics. Interdisciplinary graduate programs are also available in the fields of ocean engineering, plasmas, environmental engineering, applied science and technology, management of technology, robotics and manufacturing, fire safety engineering science, surface and subsurface hydrology, and rock mechanics. Concurrent degree programs provide a broad, integrated curriculum between two disciplines. Degrees awarded are an M.Arch. in Architecture with an M.S. in Civil and Environmental Engineering (Structural), an M.C.P. in City and Regional Planning with an M.S. in Civil and Environmental Engineering (Transportation), and an M.P.P. in Public Policy with an M.S. in engineering.

More information will be found in the engineering sections of this catalog and in the Announcement of the College of Engineering. The announcement is available from the College of Engineering, University of California, Berkeley; 308 McLaughlin Hall #1702, Berkeley, CA 94720-1702, or from any organizational unit listed below.

Organizational Units

Bioengineering Department Office: 459 Evans Hall #1782, (510) 642-5833 Chair: Dorian Liepmann, Ph.D.

Civil and Environmental Engineering Department Office: 760 Dava Hall #1710, (510) 642-3261 Chair: Gregory L. Fenves, Ph.D.

Electrical Engineering and Computer Sciences Department Office: 231 Cory Hall #1770, (510) 642-3214 Chair: Edward Lee, Ph.D.

Computer Science Division Division Office: 389 Soda Hall #1776, (510) 642-1024 Chair: Stuart Russell, Ph.D.

Industrial Engineering and Operations Research Department Office: 4141 Etcheverry Hall #1777, (510) 642-5484 Chair: Ian Adler, Ph.D.

Materials Science and Engineering Department Office: 280 H hex Memorial Mining Building #1760, (510) 642-3801 Chair: Robert O. Ritchie, Ph.D.

Mechanical Engineering Department Office: 6141 Etcheverry Hall #1740, (510) 643-7013 Chair: Albert Pisano, Ph.D.

Nuclear Engineering Department Office: 4153 Etcheverry Hall #1730, (510) 642-5010 Chair: Jasmina Vucic, Ph.D.

Interdisciplinary Studies Program Office: 230 Bechtel Engineering Center #1708, (510) 642-8790 Associate Dean: David Dornfeld, Ph.D.

Lower Division Courses

7. Introduction to Computer Programming for Scientists and Engineers. (4) 75 hours lecture per week. requisite: Mathematics 1B or (maybe taken concurrently). Formerly 77. Elements of procedural and object-oriented programming, induction, iteration, and recursion. Real functions and floating-point computations for engineering analysis. Introduction to data structures. Representative examples are drawn from mathematics, science, and engineering. The course uses the MATLAB programming language. Sponsor- ing departments: Civil and Environmental Engineering and Mechanical Engineering. (F,SP) Staff

10. Engineering Design and Analysis. (3) Three hours of lecture and three hours of laboratory per week. This is an introduction to the profession of engineering and the different fields of study in the College of Engineering, through a variety of modular design and analysis projects. The emphasis is on hands-on
creative components, teamwork, and effective communication. Common lecture sessions during the first three weeks of the semester will address ethics and societal context for engineering projects, introduction to engineering design process, and introduction to engineering analysis. Following this introduction, students will take two six-week modules involving both lectures and laboratories in which they will learn design and analysis skills, and will apply these skills to illustrative problems drawn from various engineering majors. (F,SP) Staff

24. Freshman Seminar. (1) Course may be repeated for credit as topic varies. One hour of lecture/discussion/semiminar per week. Sections 1-3 to be graded on a letter-grade basis. Sections 4-6 to be graded on a pass/not passed basis. The Berkeley Seminar Program is designed to provide students with the opportunity to explore an intellectual topic with a faculty member and a group of peers in a small-seminar setting. Berkeley Seminars are offered in all college departments, and topics vary from department to department and semester to semester. (F,SP) Staff

28. Basic Engineering Design Graphics. (3) Two hours of lecture and three hours of laboratory per week. Introduction to the concept of engineering design graphics and graphical communications tools used by engineers. Conceptual design of products. Tolerance analysis for fabrication. Documentation of design through engineering drawings. Theory of spatial modeling and feature based design. Use of Computer-Assisted Design as a design tool. (F,SP) Lieu

36. Engineering Mechanics I. (2) Two hours of lecture per week. Prerequisites: Mathematics 1A-1B; Physics 7A. Theoretical treatment of the principles of statics of particles and rigid bodies. Application to problems of equilibrium of two-dimensional and three-dimensional systems. Work and potential energy, the principle of virtual work, and stability of equilibrium. Sponsoring Department: Civil and Environmental Engineering. (F,SP) Staff

39. Freshman/Sophomore Seminar. Course may be repeated for credit as topic varies. One hour of seminar per week per unit. Sections 1-2 to be graded on a letter-grade basis. Sections 3-4 to be graded on a pass/not passed basis. Freshman and sophomore seminars offer lower division students the opportunity to explore an intellectual topic with a faculty member and a group of peers in a small-seminar setting. These seminars are offered in all campus departments; topics vary from department to department and semester to semester. Enroll limits are set by the faculty, but the suggested limit is 25. (F,SP)

45. Properties of Materials. (3) Three hours of lecture per week; three hours of laboratory per week. Prerequisites: Physics 7A. Application of basic principles of physics and chemistry to the engineering properties of materials. Special emphasis devoted to relation between microstructure and the mechanical properties of metals, concrete, polymers, and ceramics, and the electrical properties of semiconducting materials. Sponsoring Department: Materials Science and Engineering (F,SP) Staff

47. Supplementary Work in Lower Division Engineering. (1-3) Course may be repeated for credit. Prerequisites: Limited to students who must make up a fraction of a required lower division course. May be taken only with permission of the Dean of the College of Engineering. Students with partial credit in a lower division engineering course may complete the work under this heading. (F,SP) Staff

77. Introduction to Computer Programming for Scientists and Engineers. (4) Two hours of lecture, one hour of discussion, and four hours of laboratory per week. Prerequisites: Mathematics 1B. Introduction to the basic elements of procedural and object-oriented programming. Induction, iteration, and recursion. Real functions and floating-point computations for engineering analysis. Introduction to data structures. Representation and manipulation of statistics, science, and engineering. The course uses the MATLAB programming language. Sponsoring departments: Civil and Environmental Engineering and Mechanical Engineering. (F,SP) Staff

92. Perspectives in Engineering. (1) Course may be repeated for credit. One hour of lecture per week. Must be taken on a pass/not passed basis. This series of lectures provides structured opportunities for engineering students, with information on the various engineering disciplines to guide them toward choice of major. Lecturers describe research activities, how they made their career choices, and indicate future opportunities. Recommended for all Engineering Science students and required for Engineering Science undeclared students. (F) Casey

98. Directed Group Studies for Lower Division Undergraduates. (1-4) Course may be repeated for credit. For courses that vary from offering to offering. Must be taken for pass/not passed basis. Prerequisites: Consent of instructor. Seminars for group study of selected topics, which will vary from year to year. Intended for students in the lower division. (F,SP)

Upper Division Courses

101. Fractals, Chaos, and Complexity Around Us. (3) Two hours of lecture and one hour of discussion per week. Prerequisites: Mathematics 1B. Not open to students majoring in Industrial Engineering and Operations Research. Introduction to the models and techniques of operations research as they pertain to engineering system problems. Linear and dynamic programming. Queues and inventory models. Examples will be drawn from various engineering disciplines to illustrate techniques, models, and optimization of engineering systems. Sponsoring Department: Industrial Engineering and Operations Research. (F)

110. Introduction to Computers-Interdepartmental Studies. (4) Three hours of lecture and four hours of laboratory per week. Formerly Interdepartmental Studies 110. An introduction to computers and digital technology and culture. Emphasizes technical and ethical issues, programming and functions of computer hardware and software. Structure and use of the Internet. Elements of programming for the World Wide Web. Students will complete a substantial project that reflects their academic interests. Students who have completed other “computer science service courses,” at Berkeley, will receive at most one unit of credit for 110, and may receive none. For more information, see the note on “Computer Science Service Courses” in the departmental listing for Electrical Engineering and Computer Sciences, and/or consult with the instructor. (F,SP) Staff

111. Introduction to Networked Applications and Computing. (3) Three hours of lecture per week. Prerequisite: Undergraduate in good standing, and experience with personal computing and productivity applications. Any student who can successfully use a personal computer to author documents, browse the World Wide Web, etc. can successfully complete this course. Introduction to applications of networked computers, especially social, educational, and information management. Understanding of the networking, computing, and software infrastructure enabling and constraining training and applications. The goal of empowering the student to use these technologies effectively in their personal and professional life. Related policy, legal, economic, and industry issues will be covered. (SP) Staff

115. Engineering Thermodynamics. (4) Students will receive no credit for Engineering 115 after taking Mechanical Engineering 105 or Chemical Engineering 141. Four hours of lecture per week. Prerequisites: Physics 7B, Math 54; Chemistry 1B recommended. Fundamental laws of thermodynamics for simple substances; application to flow processes and to nonreversible processes; statistical thermodynamics of ideal gases and crystalline solids; chemical and materials thermodynamics; multiphase and multicomponent equilibria in reacting systems; electrochemistry. Sponsoring department: Mechanical Engineering and Nuclear Engineering. (F) Glaeser, Olander

117. Methods of Engineering Analysis. (3) Three hours of lecture and one hour of discussion per week. Prerequisites: Mathematics 53, 54. Methods of theoretical engineering analysis; techniques for analyzing differential equations; use of special functions related to engineering systems. Sponsoring Department: Mechanical Engineering. (F) Staff

120. Principles of Engineering Economics. (3) Students will receive 2 units for 120 after taking Civil Engineering 167. Two hours of lecture and one hour of discussion per week. Prerequisites: Completion of 60 units of an approved engineering curriculum. Economic analysis for engineering decision making: Capital flows, effect of time and interest rate. Different methods or evaluation of alternative technologies. Use of cost and replacement analysis. Depreciation and taxes. Uncertainty; preference under risk; decision analysis. Capital sources and their effects. Economic studies. (F,SP) Adler

124. Ethics and the Impact of Technology on Society. (3) Three hours of lecture and one hour of discussion per week. Prerequisites: Upper division standing. Formerly Letters and Science 124. This course focuses on the changing nature of technology and the complex ethical issues that arise. These new issues are arising in such areas as biotechnology, information technology, nanotechnology, and nuclear technology. The nature of these issues, their ethical, legal, and social ramifications, and what our society values in relation to these issues are discussed. Philosophy, religion, and the natural and social sciences will be explored in relation to these issues. (SP) Hauser-Kastenberg, Kastenberg

128. Advanced Engineering Design Graphics. (3) Two hours of lecture and four hours of laboratory per week. Prerequisites: 28, 45. Advanced graphics tools for engineering design. Parametric solid modeling. Assembly modeling. Presentation using computer animation and multimedia techniques. (SP) Staff

140. Technical Communication for Non-Native Speakers of English. (3) Three hours of lecture per week. Prerequisites: English R1A or equivalent course; upper division or graduate standing. Formerly Interdepartmental Studies 140. Emphasis on improving language skills and use of the computer in technical presentations. This course is designed to prepare non-native speakers for the more advanced work in Engineering 190. Sponsoring departments: College Writing and the College Seminars, and Intercolleges.

147. Supplementary Work in Upper Division Engineering. (1-3) Course may be repeated for credit. Prerequisites: Limited to students who must make up a fraction of a required upper division course. May be taken only with permission of the Dean of the College of Engineering. Students with partial credit in an upper division engineering course may complete the work under this heading. (F,SP) Staff

170. Introduction to Modeling and Simulation. (4) Four hours of lecture per week. Prerequisites: Junior, senior, or graduate standing. Engineering 77N, Mathematics 53, 54. Formerly 170A-170B. Introduces concepts of computational modeling and simulation, using multidisciplinary projects drawn from biology, chemistry, applied mathematics, and physics, and all areas of engineering. Models proposed through problem statement, mathematical model, approximations and analytic solution, discrete model, object-oriented model, implementation and simulation, visualization and comparison to analytical and experimental observation. Includes a broad survey of simulation techniques. (F) Verbongeau

177. Advanced Programming with MATLAB. (3) Three hours of lecture and one voluntary discuss-
180A-180B. Computational Engineering Science Modeling and Simulation VI. (4-4) Four hours of lecture per week. Prerequisites: Senior/graduate standing in engineering or applied sciences, 77, Mathematics 53, 54 (one of these may be taken concurrently); or consent of instructor. Course may be repeated for credit. Formerly 180B must be taken prior to taking 180B. This course sequence focuses on the concepts of computational modeling and simulation. Concepts are illustrated with problems from multidisciplinary areas such as computational engineering science. Areas covered span biology, chemistry, applied mathematics, and physics, as well as all areas of engineering. Students will be expected to design and develop mathematical models, approximations and analytic solution, discrete model, and multidisciplinary model implementation and simulation, visualization, and comparison to analysis, experiment, and observation. 

180A emphasizes modeling and techniques, project planning, algorithm and software design, team and multidisciplinary interaction, illustrated with many small projects.

180B stresses project planning, management, modeling, simulation, visualization, and presentation, with team experience drawn from many areas, illustrated with small projects and a large semester-long team project. (F,SP) Verboncoeur

190. Technical Communication. (3) Three hours of lecture per week. Prerequisites: English 1A or equivalent course; upper division standing. Principles of technical communication: analyzing an audience; organizing material; developing a clear, economical style; using proper formats and rhetorical strategies for formal technical reports, feasibility studies, abstracts, descriptions and instructions, proposals, letters, and memos. Emphasis on presentations to technical and nontechnical audiences. Sponsoring Department: Engineering Interdisciplinary Studies. (F,SP) Staff

191. Engineering Ethics. (3) Three hours of lecture and one discussion section per week. Prerequisites: Upper division standing in engineering or science discipline, or consent of instructor. Formerly 191A. Historical, regional, and cultural perspectives on ethics. The ethics of issues associated with modern technology and the effect of technology on social, cultural, and economic systems. Environmental impact of engineering activities. The role of the engineer in controlling technology uses. Ethical and legal responsibilities of the engineering professional. Engineering codes of ethics and professional organizations. Case histories of ethical conflicts in the workplace. (F,SP) Udell

193. California Engineer. (1) Course may be repeated once for credit. Three hours of laboratory per week. Must be taken on a pass/credit basis. Work on the California Engineer magazine, in one or more capacities: read candidate articles, edit articles, enter articles into UNIX computer system for typesetting, draw technical illustrations, photography, issue layout, issue paste-up, write articles on assignments, prepare announcements, advertising sales, public relations. Sponsoring Department: Electrical Engineering and Computer Science. (F,SP) Staff

195. Science, Technology, and Culture. (3) Three hours of lecture/discussion per week. Prerequisites: English 1A or equivalent; a course in physical or biological science; upper division standing. This course demonstrates the role of science and technology in society and provides hand-on experience for object-oriented programming as well as exposes a practical knowledge of advanced features available in MATLAB. The course consists of a brief review of basic MATLAB features and quickly move to class organization and functionality. The introduced concepts are reinforced by examining the advanced graphical features of MATLAB. Many exercises will include the effective use of programs written in C and FORTRAN, and will cover SIMULINK, a MATLAB toolbox providing for an effective way of model simulations. Throughout the course the emphasis will be placed on examples and homework assignments from engineering disciplines. (SP) Frenklach, Packard

191. Engineering Ethics. (3) Three hours of lecture per week. Prerequisites: Upper division standing in engineering or science discipline, or consent of instructor. Formerly 191A. Historical, regional, and cultural perspectives on ethics. The ethics of issues associated with modern technology and the effect of technology on social, cultural, and economic systems. Environmental impact of engineering activities. The role of the engineer in controlling technology uses. Ethical and legal responsibilities of the engineering professional. Engineering codes of ethics and professional organizations. Case histories of ethical conflicts in the workplace. (F,SP) Udell

193. California Engineer. (1) Course may be repeated once for credit. Three hours of laboratory per week. Must be taken on a pass/credit basis. Work on the California Engineer magazine, in one or more capacities: read candidate articles,edit articles, enter articles into UNIX computer system for typesetting, draw technical illustrations, photography, issue layout, issue paste-up, write articles on assignments, prepare announcements, advertising sales, public relations. Sponsoring Department: Electrical Engineering and Computer Science. (F,SP) Staff

195. Science, Technology, and Culture. (3) Three hours of lecture/discussion per week. Prerequisites: English 1A or equivalent; a course in physical or biological science; upper division standing. This course demonstrates the role of science and technology in society and provides hand-on experience for object-oriented programming as well as exposes a practical knowledge of advanced features available in MATLAB. The course consists of a brief review of basic MATLAB features and quickly move to class organization and functionality. The introduced concepts are reinforced by examining the advanced graphical features of MATLAB. Many exercises will include the effective use of programs written in C and FORTRAN, and will cover SIMULINK, a MATLAB toolbox providing for an effective way of model simulations. Throughout the course the emphasis will be placed on examples and homework assignments from engineering disciplines. (SP) Frenklach, Packard

201. Ocean Engineering Seminar. (2,3) Two hours of lecture or two hours of lecture and one hour of consultation per week. Prerequisites: Enrollment in Ocean Engineering Master of Engineering Program or consent of instructor. Lectures on new developments in ocean, arctic engineering. The optional third unit covers the course of design of arctic structures for ice structure interaction. The additional unit will require that students meet with the instructor one extra hour per week to work on an individual project. Topics covered: ice mechanics; critical structural forces; and other ice actions on structures. Term paper required. Sponsoring department: Engineering Interdisciplinary Studies. (SP) Staff


231. Mathematical Methods in Engineering. (3) Three hours of lecture per week. Prerequisites: Mathematics 1A-1B, 33 and 54 or equivalent. This course offers an integrated treatment of three topics essential to modern engineering random processes and optimization. These topics will be covered more rapidly than in separate undergraduate courses covering the same material, and will draw on engineering examples for motivation. The stress will be on proofs and computational aspects will also be highlighted. It is intended for engineering students whose research focus has a significant mathematical component, but who have not previously had a thorough exposure to these topics. (F,SP) Packard, Polizzotto

232. Charged Particle Sources and Beam Technology. (3) Three hours of lecture per week. Prerequisites: Graduate standing or consent of instructor. Topics in this course will include the latest technology of various types of ion and electron sources, extraction and formation of charge particle beams, computer simulation of beam propagation, diagnostics of ion sources and transport systems, and the application of ion beams in fusion, synchrotron light source, neutron generation, microelectronics, lithography, and medical therapy. This is a general accelerator technology and engineering course that will be of interest to graduate students in physics, electrical engineering, and nuclear engineering. Also listed as Nuclear Engineering C282. (F) Leung, Steier

232L. Charged Particle Beam Instrumentation Laboratory. (1) Three hours of laboratory/discussion per week. Prerequisites: Consent of instructor. Formerly 266. This course is designed to accompany Nuclear Engineering C282 and Physics of Medical Imaging C253A. It is intended for students who have not previously had a thorough exposure to the topics covered in, or consent of instructor. Formerly 266. Application of particle methods to current problems of fluid dynamics and numerical methods for differential equations, or consent of instructor. Formerly 266. Application of particle methods to current problems of fluid dynamics, including compressible and incompressible flow. Sponsoring department: Mechanical Engineering. (F) Marcus

253A-253B. Physics of Medical Imaging. (3) Three hours of lecture, three hours of laboratory, and one hour of voluntary discussion per week. Prerequisites: A graduate-level course in fluid dynamics or numerical methods for differential equations, or consent of instructor. Formerly 266. Application of particle methods to current problems of fluid dynamics, including compressible and incompressible flow. Sponsoring department: Mechanical Engineering. (F) Marcus
in the various fields or engineering or other sciences associated with engineering problems. Topics which form the basis of seminars will be announced at the beginning of each semester. (F,SP) Staff

Engineering—Joint Major Programs (College of Engineering)

Engineering Student Affairs Office: 308 McLaughlin Hall
#1702, (510) 642-7594
www.coe.berkeley.edu

Overview of Programs

Joint Major Programs of Study. The Joint Major Program is designed for students who wish to undertake study in two major areas of engineering in order to qualify for employment in either field or for positions in which competence in two fields is required. These curricula include the core courses in each of the major fields. While they may require slightly increased course loads, they can be completed in four years. Both majors are shown on the student’s transcript of record. Admission to joint major programs is open to freshmen but open to transfer students. Continuing students may petition for change to joint major programs in the final semester of the sophomore year. For complete information about programs of study under the joint major, see the Announcement of the College of Engineering.

Students may prepare for a bachelor’s degree combining study in the following areas: Bioengineering/Materials Science and Engineering; Electrical Engineering and Computer Sciences/ Materials Science and Engineering; Mechanical Engineering/ Materials Science and Engineering/Nuclear Engineering; Electrical Engineering and Computer Sciences/Nuclear Engineering; Mechanical Engineering/Nuclear Engineering.

In addition to the joint major programs within the College of Engineering listed above, two joint major curricula involving the College of Engineering and the College of Chemistry are offered. These are: (1) Chemical Engineering/Materials Science and Engineering and (2) Chemical Engineering/Nuclear Engineering. Details on these curricula can be found in the Announcement of the College of Chemistry and the Announcement of the College of Engineering.

In accordance with its fourth goal, at the graduate level, the Meakin Center serves a large number of non-engineering students through its information technology course (E 110: Introduction to Computers). In keeping with its first goal, the Meakin Center offers courses in technical communication (E 190: Technical Communication; and E 140: Technical Communication for Non-Native Speakers of English) and business aspects of engineering.

Consistent with its second goal, the Meakin Center serves a large number of non-engineering students through its information technology course (E 110: Introduction to Computers). The third goal of the Meakin Center is realized in the undergraduate programs in Engineering Science, which accommodate some 300 students. (For details on these programs, see the Engineering Science section of this catalog.) In accordance with its fourth goal, at the graduate level, the Meakin Center supports the activities of one graduate group and several interdisciplinary committees.

The Applied Science and Technology Graduate Group leads to the Ph.D. degree in applied science and technology. For more information about the Applied Science and Technology Graduate Group, see the relevant section of this catalog.

The interdisciplinary committees are Applied Science and Technology; Art, Technology, and Culture; Control, Robotics and Manufacturing; Engineering Science; Entrepreneurship and Technology; Management of Technology; Ocean Engineering; and Technology and Sustainability. These committees provide a wide range of interdepartmental activities, including special course offerings, group studies and seminars, and public lectures and conferences.

In addition, the Management of Technology (MOT) Certificate Program was established in 1987 as a research and a teaching program that seeks to bring together faculty and students to address critical technology management issues. The certificate program is open to all graduate students enrolled in the Haas School of Business, the College of Engineering, or the School of Information, and it allows students to specialize in the management of technology as they obtain their degrees. There is no separate admissions process for the MOT program. Once enrolled, students are eligible to take courses leading to a Certificate in Management of Technology. For information, contact the Management of Technology Program, 230 Bechtel Engineering Center, University of California, Berkeley, CA 94720-1708; (510) 642-8790. E-mail: motadmin@haas.berkeley.edu. Web site: mot.berkeley.edu.

Engineering—Interdisciplinary Studies (College of Engineering)

Program Office: 230 Bechtel Engineering Center #1708,
(510) 642-8790
www.coe.berkeley.edu/id
Associate Dean: David Dornfeld, Ph.D.,
dornfeld@me.berkeley.edu

Overview

Interdisciplinary studies involving various branches of engineering, the natural sciences and mathematics, the biological sciences, the social sciences, and the humanities are coordinated through the Meakin Interdisciplinary Studies Center. The Meakin Center has four main goals: (1) to promote knowledge of the humanities and social sciences among students of the College of Engineering; (2) to provide students in the social sciences and humanities with a working knowledge of information technology and computing; (3) to sustain the interdisciplinary undergraduate programs in Engineering Science (Computational Engineering Science, Engineering Mathematics and Statistics, Engineering Physics, Environmental Engineering Science, and Engineering—Undeclared); and (4) to support interdisciplinary graduate programs and research (the Applied Science and Technology Graduate Group, the Management of Technology Certificate Program, and several interdisciplinary committees).

Students pursue multiple projects in identifying and developing commercially technology-oriented ventures.

The academic program of the CET offers an undergraduate certificate program. The program is administered through the College of Engineering’s Meakin Interdisciplinary Studies Center. Details about this new program can be found at cet.berkeley.edu.

For additional information about the center, write to the Meakin Interdisciplinary Studies Center, 230 Bechtel Engineering Center #1708, College of Engineering, University of California, Berkeley, Berkeley, CA 94720-1708.

Courses

Engineering’s Interdisciplinary Studies Center sponsors the following Engineering courses found in the Engineering section of this catalog:

39A. Sources of Science, Engineering, and Technology
39B. Introduction to Computational Engineering Science
92. Perspectives in Engineering
110. Introduction to Computers
124. Ethics and the Impact of Technology on Society
140. Technical Communication for Non-Native Speakers of English
170A-170B. Introduction to Modeling and Simulation I/II
180A-180B. Computational Engineering Science Modeling and Simulation I/II
190. Technical Communication
195. Science, Technology, and Culture
201. Ocean Engineering Seminar
298A. Applied Science and Technology Seminar: Introduction to Electron Beam Lithography and Nanofabrication Technology
298B. Soft X-Rays, Nanostructures, and Applications

*See the Management of Technology program’s web site (mot.berkeley.edu) for further course listings and relevant details about the certificate program.

In addition, the center co-sponsors the following Applied Science and Technology (AST) courses:
C201. Magnetic Materials (cross-listed as Engineering C217)
C210. Soft X-Rays and Extreme Ultraviolet Radiation (cross-listed as Electrical Engineering C213)
C225. Thin-Film Science and Technology (cross-listed as Materials Science and Engineering C225)
C239. Partially Ionized Plasmas (cross-listed as Electrical Engineering C239)
C295R. Applied Spectroscopy (cross-listed as Chemical Engineering C295R)
Engineering Science
(College of Engineering)

Program Office: 230 Bechtel Engineering Center #1708,
(510) 642-8790
www.coe.berkeley.edu/engsci
Associate Dean: David Dornfeld, Ph.D.,
dornfeld@berkeley.edu

Programs for the Bachelor's Degree

Each undergraduate Engineering Science curriculum is multidisciplinary and interdisciplinary. The courses of study include closely related fields of the natural sciences, mathematics, physics, and engineering. The options offered within engineering science prepare students especially for advanced graduate study and teaching; for the natural sciences. The four Engineering Science options—computational engineering science, engineering mathematics and statistics, engineering physics, and environmental engineering science—are listed below.

Applicants at the freshman level may apply to any of the engineering science options. Students will be advanced to the upper division in engineering science upon satisfactory completion of the lower division requirements.

Computational Engineering Science

This new interdisciplinary program recognizes the growing importance of computation as a methodology in attacking complex scientific and engineering problems. Combined with mathematical modeling and experimental observations, scientific computation enables engineers and scientists to solve problems otherwise intractable. The Computational Engineering Science (CES) program provides a solid foundation in mathematics, the sciences, and engineering and fosters skills required for modeling, simulating, and solving complex problems. The emphasis is on the computation of science rather than the science of computation (i.e., CES is not computer science). Students have the opportunity to select courses from a wide variety of disciplines (see the section on clusters in the detailed description of the program in the Announcement of the College of Engineering). The program provides a sound basis for graduate studies in engineering and the applied sciences. Additionally, it nurtures skills that are needed in large-scale technological modeling and simulations relevant to research in industrial and national courses.

Lower Division. Mathematics 1A-1B, 53, 54 or Statistics 134 or Math 110 or Computer Science 70; Physics 7A-7B; Chemistry 1A; three science electives from the approved list; Engineering 7, 10, 39B; Computer Science 61B, humanities and social studies electives. For further details, see the Announcement of the College of Engineering.

Upper Division. Mathematics 104 and 185 or 121A-121B; Physics 110A-110B or Electrical Engineering 110 and 119; Physics 137A-137B; Mechanical Engineering 104 or Physics 105; Nuclear Engineering 104A or Physics 111 or Electrical Engineering 143; Physics 112 or Engineering 115; Engineering 142; Materials Science and Engineering 111; Mechanical Engineering 106 or 185; 14 units of upper division courses in the Department of Physics; 16 units of upper division engineering courses. For details about technical electives, see the Announcement of the College of Engineering.

Humanities/Social Studies Electives include six courses of at least 3 units each in humanities and social studies selected from an approved list of courses. Two of these must fulfill the College of Engineering Reading and Composition requirement. Refer to www.coe.berkeley.edu/current_students/hsreq.pdf for details or go to 308 McLaughlin Hall for a handout.

Engineering Physics

This program interweaves the fundamentals of classical and modern physics, chemistry, and mathematics in engineering applications. A great strength of the program is its flexibility. The firm base in physics and mathematics is augmented with a selection of engineering course options that prepare the student to tackle the complex problems faced by society. Because the program emphasizes science and mathematics, students are well-prepared to pursue graduate studies in physics or engineering. With the proper choice of electives, the program also allows a student to apply for a transfer to a more traditional field of engineering should such an interest develop.

Lower Division. Mathematics 1A-1B, 53, 54; Physics 7A-7B-7C; Chemistry 1A-1B; Computer Science 61A or 61B; Engineering 7; humanities and social studies electives from approved list (Physics 7C, Biological Physics, Medical Physics, Advanced Physics, Environmental Science). For further details, see the Announcement of the College of Engineering.

Upper Division. Mathematics 104 and 185 or 121A-121B; Physics 110A-110B or Electrical Engineering 110 and 119; Physics 137A-137B; Mechanical Engineering 104 or Physics 105; Nuclear Engineering 104A or Physics 111 or Electrical Engineering 143; Physics 112 or Engineering 115; Engineering 142; Materials Science and Engineering 111; Mechanical Engineering 106 or 185; 14 units of upper division courses in the Department of Physics; 16 units of upper division engineering courses. For details about technical electives, see the Announcement of the College of Engineering.

Humanities/Social Studies Electives include six courses of at least 3 units each in humanities and social studies selected from an approved list of courses. Two of these must fulfill the College of Engineering Reading and Composition requirement. Refer to www.coe.berkeley.edu/current_students/hsreq.pdf for details or go to 308 McLaughlin Hall for a handout.

Environmental Engineering Science

This is a multidisciplinary field requiring an integration of physical, chemical, and biological principles with engineering analysis for environmental protection and restoration. The program incorporates courses from many departments on campus to create a discipline that is rigorously based in science and engineering, while addressing a wide variety of environmental issues. Although environmental engineering undergraduates may take courses in the chemical, civil, mechanical, and materials science and engineering departments, the engineering science curriculum provides a more broadly based foundation in the sciences than is possible in these departments. This major prepares the student for a career or graduate study in many environmental areas.

Lower Division. Mathematics 1A-1B, 53, 54; Chemistry 1A or 4A; Engineering 7; Engineering 10 (or basic science course from one of the following: Biology 1A or Earth and Planetary Science 50 or Chemistry 1B or 3A or Physics 7A or 7B; Biology 1B; Engineering 36; two basic science electives from approved list (Physics 7C, Biology 1A, Chemistry 3A and 3L, 3B and 3L, 5, or EPS 50); reading and composition electives; humanities and social studies electives. For details, see the Announcement of the College of Engineering.

Upper Division. Civil Engineering 100 or Mechanical Engineering 106 or Chemical Engineering 150A; Civil Engineering 130 or Mechanical Engineering 104; Chemical Engineering 141 or Engineering 115 or Mechanical Engineering 105 or 105B; Civil Engineering 111; Engineering 177; Mathematics 121A-121B or Mathematics 110 and 128A or Statistics 134 and 135 or Engineering 117 and 170A; Civil Engineering 101 or 103 or 173 or Mechanical Engineering 162 or EPS 105 or EPS 181 or ESPM/EPSC 129; humanities and social studies electives; the advanced science sequence; and the engineering science skills cluster as outlined in the Announcement of the College of Engineering.

Humanities/Social Studies Electives include six courses of at least 3 units each in humanities and social studies selected from an approved list of courses. Two of these must fulfill the College of Engineering Reading and Composition requirement. Refer to www.coe.berkeley.edu/current_students/hsreq.pdf for details or go to 308 McLaughlin Hall for a handout.

General Degree Requirements

All engineering science programs require the completion of the Humanities/Social Studies requirement that includes six courses of at least 3 units each in humanities and social studies selected from an approved list of courses. Two of these must fulfill the College of Engineering Reading and Composition requirement. Refer to www.coe.berkeley.edu/current_students/hsreq.pdf for details or go to 308 McLaughlin Hall for a handout.

All engineering science programs also must include at least 40 units of approved technical subjects (mathematics, statistics, science, engineering), of which at least 16 units are upper division engineering courses (required upper division courses may be included). For further details, see the Announcement of the College of Engineering.

Engineering—Undeclared

(College of Engineering)

Program Office: 230 Bechtel Engineering Center, #1708, 165 Standish Way, (510) 642-8790
www.coe.berkeley.edu/engsci/undeclared.html
Associate Dean: David Dornfeld, Ph.D.,
dornfeld@berkeley.edu

This lower division program is intended for academically strong students interested in pursuing an engineering education—but who are not yet ready to choose a specialization within engineering. The undeclared option supplements the freshman-honors core curriculum and the attractor courses (courses designed to attract students to a major) that introduce the student to the various engineering fields. Before their junior year, undeclared students must transfer from the undeclared option into a degree program. The programs available for transfer within the College of Engineering include bioengineering, civil engineering, computational engineering science, earth
resources engineering, electrical engineering and computer sciences, engineering mathematics and statistics, engineering physics, environmental engineering, industrial engineering and operations research, manufacturing engineering, materials science and engineering, mechanical engineering, nuclear engineering and the engineering double majors.

Lower Division. Mathematics 1A-1B, 53, 54; Chemistry 24A, 24B; two lower division computer science courses approved by an adviser; Physics 7A-7B; Engineering 7, 10, and 92; Humanities and Social Studies electives; attractor course; technical electives; required for the major, at least seven must be upper division courses in accord with the areas of concentration described under “Major Program” below. Prerequisites, as well as a detailed description of major requirements, may also be found there.

College Writing. Students must have fulfilled the requirement in College Writing before taking any course in the Department of English. For further information, see the College Writing listing in the Index.

Note: Specific topics in the following staff courses vary from semester to semester. For courses 25A, 25B, 25C, 110, 117A, 117B, 117J, 117S, 201A, 201B, 203, and 250. Offerings and instructors for these and all other scheduled courses are listed each semester in the department’s “Announcement of Classes,” available online at english.berkeley.edu.

Many of the courses listed below have limited enrollments.

Major Program

The English major program consists of a core structure of foundational courses and a recommended set of 11 areas of concentration from which students choose courses in order to focus their literary study at the upper division level. No fewer than 12 courses (not including R1A–R1B) constitute the major, of which at least seven must be upper division courses.

Major Requirements

I. Foundational Courses. All majors must take English 45A-45B-45C (or upper division paired equivalents, when approved by a major adviser) in order to satisfy the following English courses:

- English 17, 117A, 117B, 117J, or 117S.
- One upper division course in British, American, or Anglophone literature from an historical period before 1800 must be taken, and standard course offerings that would meet this requirement include English 105, 110, 111, 112, 114A, 114B, 115A, 115B, 118, 119, 120, 125A, and 130A; this requirement may not be fulfilled by English 100, C107, or any Shakespeare course. (Note: Certain designated sections of English 150 can be used to satisfy the pre-1800 requirement.) All required courses must be taken for a letter grade. Students may declare the major once they have taken 30 units and completed two of these major requirements:

  - 45A or 45B; and
  - one of the following: Shakespeare (see list above), 45A, 45B, or 45C.

It is also strongly recommended that students complete the L&S Reading and Composition requirement before declaring the major.

II. Upper Division Courses. Of the 12 courses required for the major, at least seven must be upper division.

Department Overview

The Department of English offers courses in literature, in language, and in writing. Courses in literature have many different focuses: major authors, historical periods, genres, critical theories and methods, as well as cultural and multicultural studies. Courses in language offer instruction in both the history and the structure of the English language. Writing courses offer training in both expository and creative writing.
A. Seminars. Two upper division seminaries—English 100 (Junior Seminar) and 150 (Senior Seminar)—are required and must be taken for a letter grade. Ordinarily, but not necessarily, these courses will fall within at least one of the 11 areas of concentration listed below.

Note: With the approval of a major adviser, students may count up to two upper division courses in departments other than English toward the 12 required. The major adviser’s approval should be grounded in a compelling intellectual rationale, one that explains how the student’s work for the English major will be enriched through the inclusion of the particular outside course the student wishes to take. For appropriate courses outside English, consult the listings for Comparative Literature, Ethnic Studies, foreign language departments, History, History of Art, Linguistics, Philosophy, Rhetoric, Women’s Studies, etc. Students gaining 8 units or more of credit toward the English major from education abroad programs normally will not be permitted to count additional upper division coursework from other UC Berkeley departments.

B. Areas of Concentration. The department strongly recommends that at least three upper division courses fall within one of the areas of concentration. Ordinarily, but not necessarily, these courses will fall within at least one of the areas of concentration designed by the student in consultation with a faculty adviser.

The English Department’s “Announcement of Classes,” posted every semester on the web, lists upper division course offerings by area of concentration, that is, by the major adviser who will be supervising the student’s work for the English major. The balance of the upper division coursework will be assessed by an English Department faculty adviser on a case-by-case basis. Students should submit documentation (e.g., course descriptions, syllabi, class papers, and other written work) to demonstrate that the education abroad course is comparable in coverage, rigor, and substance to the Berkeley upper division course. Students gaining 8 units or more toward the English major for EAP courses normally will not be permitted to count additional upper division coursework from other Berkeley departments toward the major. The English major requires a foreign language proficiency. Students may choose a foreign language for their upper division coursework from among the English department’s majors in the following areas: Comparative Literature, Ethnic Studies, foreign languages, linguistics, Philosophy, Rhetoric, Women’s Studies, etc.

For a description of the areas and a list of courses regularly taught in each area, please consult the official description of the major, available at the department office and on our web site.

• Medieval Period (literature in English through 1485)
• Early Modern Period (Renaissance through Milton)
• Enlightenment (late 17th century through early 19th century)
• Nineteenth Century (through early Modernism)
• Twentieth Century (from Modern to Contemporary)
• Anglophone and Multicultural Studies
• Genre Studies (Narrative, Poetry, or Drama, for example)
• Sexual Identities/Gender Studies
• Literary Theory
• Folklore, Popular Culture, and Cultural Theory
• Linguistics and the English Language

Additional Notes

Honors Program. H195A-H195B is a two-semester course, graded IP at the end of the first semester. Honors in English cannot be granted without the successful completion of this course. Students who take H195A-H195B may choose to waive their English 150 requirement. H195A is organized as a course in literary criticism working toward the formation of a thesis topic. H195B will include regular meetings with the thesis adviser plus small group meetings with the H195 instructor. During the fall semester each student will write a 40-60 page completion of the thesis is required for a passing grade in the course. Students with an overall GPA of 3.51 or higher and a GPA of 3.65 or higher in courses taken at Berkeley in the major are eligible to apply. Those accepted must enroll in H195A for the fall semester of their senior year. There may be more than one section offered per semester. Students interested in the honors program should check the English Department’s “Announcement of Classes” in early April for exact information.

Meeting with Major Adviser. English majors should meet with a faculty adviser no later than the beginning of the semester following declaration to plan their courses of study. Students are encouraged to organize their upper division coursework by choosing an area of concentration (defined above).

Pass/Not Pass. English majors are permitted to take no more than two of the 12 required courses on a passed/not passed basis. These two courses may not include any of the specifically required courses, i.e., 45A-45B-45C (or their upper division equivalents), Shakespeare, the pre-1800 course, English 100, or 150.

Summer Sessions. Only one Summer Sessions course normally may be counted toward fulfilling the 12-course major requirements.

Education Abroad Programs. Credit toward the major may be earned through an education abroad program determined by a major adviser on a case-by-case basis. Students should submit documentation (e.g., course descriptions, syllabi, class papers, and other written work) to demonstrate that the education abroad course is comparable in coverage, rigor, and substance to a Berkeley upper division course. Students gaining 8 units or more toward the English major for EAP courses normally will not be permitted to count additional upper division coursework from other Berkeley departments toward the major. The English major requires a foreign language proficiency. Students may choose a foreign language for their upper division coursework from among the English department’s majors in the following areas: Comparative Literature, Ethnic Studies, foreign languages, linguistics, Philosophy, Rhetoric, Women’s Studies, etc. Students gaining 8 units or more of credit toward the English major from education abroad programs normally will not be permitted to count additional upper division coursework from other UC Berkeley departments.

For appropriate courses outside English, consult the listings for Comparative Literature, Ethnic Studies, foreign language departments, History, History of Art, Linguistics, Philosophy, Rhetoric, Women’s Studies, etc. Students gaining 8 units or more of credit toward the English major from education abroad programs normally will not be permitted to count additional upper division coursework from other UC Berkeley departments.

Internships. Students may apply to a faculty adviser to receive course credit (either as a 99 or 199) for an internship. No more than 2 units will be awarded on a passed/not passed basis. Students must provide official documentation about the internship and, upon completion of this program, a statement from the internship director that describes duties that the student performed. In addition, students must produce critical or creative writing on a topic related to the internship. This writing will be assessed by an English Department faculty member who has agreed in advance of the internship to supervise the student. This faculty member will be the instructor of record for the 99/199.

Additional Information. Further details about the major are available at the department office.

Visit Us Online. You will find course descriptions and book lists, faculty office hours, and information about honors, the minor, and transfers on the English Department’s web site at english.berkeley.edu.

Minor Program

Students in the College of Letters and Science may complete one or more minors of their choice, normally in a field both academically and administratively distinct from their major. English majors may not complete a minor in the English Department.

The minor in English requires the completion of at least five upper division courses taken for a letter grade, of which at least three must be taken at Berkeley, with a GPA of at least 2.0. For the minor, it is strongly recommended that at least three of the five courses be upper division concentration courses under Major Requirements, IIB.

All minors must see the minor adviser to register for the program. Registration gives some priority to English minors during their Tele-BEARS appointments.

Graduate Program

Students are admitted to graduate studies only in the fall semester. The GRE General Test and Subject Area Test in Literature are required.

The Ph.D. Program. The Ph.D. program requires successful completion of 10 quarter courses, of which at least seven will be in English, to be distributed as follows: English 200, an introductory course in literary scholarship, normally taken in the first semester of graduate study; one course at the graduate level in each of four historical fields: Medieval through 16th Century (British); 17th through 18th Century (British and/or American); 19th Century (British, American, and/or Anglophone); 20th Century (British, American, and/or Anglophone); one course organized in terms other than chronological coverage of English or American literature (e.g., theory, special problems, minority discourse). At least one of these courses must be a 250 seminar, requiring a substantial piece of writing. In addition, students must take English 302 (The Teaching of Composition and Literature). The language requirement must be met, through coursework or examination, by demonstrating advanced knowledge in one, or proficiency in two, approved language(s). The balance of the Ph.D. program includes passing a two-hour oral examination, a prospectus conference, and writing a dissertation. The normal time for completing the doctoral program is six years.

Prospective students are urged to undertake substitute coursework in English and American literature, as well as to gain a solid background in foreign languages. Prospective applicants should request additional information about program requirements and application procedures from the English Graduate Office, 319 Wheeler Hall.

The M.A. Degree. The English department does not offer a separate M.A. program. Students working toward the Ph.D. may, however, receive an M.A. degree after fulfilling the appropriate requirements.

Courses in Writing

Note: Courses in writing require individual conferences as part of the expected student workload. Some instructors in courses in the 43 and 143 series may offer their classes on a passed/not passed basis only. Students will find information about the grading basis of a specific class in these courses in the English Department’s “Announcement of Classes,” available at pre-enrollment.

Enrollment in most writing classes is limited; consult the English Department’s “Announcement of Classes” for application procedures for these courses.

Lower Division Courses

R1A-R1B. Reading and Composition. (4,4) Three hours of lecture per week. Prerequisites: UC Entry Level Writing Requirement or UC Analytical Writing Placement Exam. R1A or equivalent course is prerequisite to R1B. Formerly 1A. Training in writing expository prose. A. Instruction in expository writing in conjunction with reading literature. Satisfies the first half of the Reading and Composition requirement.

B. Further instruction in expository writing in conjunction with reading literature. Satisfies the second half of the Reading and Composition requirement.

43A. Introduction to the Writing of Short Fiction. (4) Three hours of lecture per week. Prerequisites: Consent of instructor. A workshop course intended for students who have recently begun to write fiction or who have not previously taken a course in creative writing.

43B. Introduction to the Writing of Verse. (4) Three hours of lecture per week. Prerequisites: Consent of instructor. A workshop course intended for students who have recently begun to write verse or who have not previously taken a course in creative writing.

*Professor of the Graduate School
Recipient of Distinguished Teaching Award
R50. Freshman and Sophomore Studies. (4) Three hours of lecture per week. Prerequisites: R1A or equivalent. Writing-intensive introduction to the study of literature; fulfills College Composition and Composition requirement. Highly recommended for prospective English majors who have not yet taken R1B. Topics and readings vary from semester to semester. Students should consult the “Announcement of Classes” for current offerings well before the beginning of the semester. Sections limited to 17 students.

Upper Division Courses

141. Modes of Writing (Exposition, Fiction, Verse, Etc.). (4) Course may be repeated once for credit with different instructor. Three hours of lecture per week. Prerequisites: R1A-R1B or equivalent. Writing in connection with readings in recent English literature and its continental background.

142A. Advanced Composition for Potential English Teachers in Secondary Schools. (4) Three hours of lecture per week. Prerequisites: Consent of instructor. Advanced composition and methods of teaching composition; emphasis on writing about literature with readings from literature of major American ethnic groups suitable for young people. Primarily for students who wish to pursue English as their single subject teaching credential.

143A. Short Fiction. (4) Course may be repeated for credit. Three hours of lecture per week. Prerequisites: Consent of instructor. A seminar in writing short stories.

143B. Verse. (4) Course may be repeated for credit. Three hours of lecture per week. Prerequisites: Consent of instructor. A seminar in writing poetry.

143E. Playwriting. (4) Course may be repeated for credit. Three hours of lecture per week. Prerequisites: Consent of instructor. A seminar in playwriting.

143N. Prose Nonfiction. (4) Course may be repeated for credit. Three hours of lecture per week. Prerequisites: Consent of instructor. A seminar in the writing of prose nonfiction as an art.

143T. Poetry Translation Workshop. (4) Course may be repeated for credit. Three hours of lecture per week. Prerequisites: Consent of instructor. Students in literature courses are expected to translate, working knowledge of at least one foreign language. Open to those who wish to assimilate foreign influences for writing poetry or to seek a fuller understanding of any foreign poetry by rendering it into English.

C143V. Visual Autobiography. (4) Six hours of lecture per week. Prerequisites: Consent of instructor. Since visual and literary studies have historically been viewed as separate disciplines, we will use theories from both traditions to examine the forms of self-representation that defy disciplinary boundaries, or what we call “visual autobiography.” The course aims to help students become conversant with the elements of alphabetic literacy (reading and writing) and visual literacy (observing and making) in order to develop a third distinctive textual/visual literacy. Also listed as Visual Studies C185A, Undergrad Interdisciplinary Studies C135, and Amer. Studies C174. This course satisfies the American Culture requirement.

Courses in Language

Course: In addition to the courses listed below, see also 105, 179, 201A, 201B, and 205A-B, as well as offerings in Linguistics, Philosophy, Anthropology, Rhetoric, and other disciplines.

Lower Division Courses

25. English as a Language. (4) Three hours of lecture per week. An introduction to the grammar of English, including phonology (sound structure), morphology (word structure), syntax (sentence structure), semantics (meaning), and pragmatics (contextual meaning), with consideration of different varieties of English in use within the United States and throughout the world, and comparison of English with other languages.

Upper Division Courses

101. The History of the English Language. (4) Three hours of lecture per week. The history of the English language from its Indo-European roots, through its Old, Middle, and Early Modern periods, as preserved in the literary heritage, to its different forms in use through the world today.

102. Topics in the English Language. (4) Course may be repeated for credit with different topic. Three hours of lecture per week. Topics vary from semester to semester.

Courses in Literature

Note: Students in literature courses are expected to devote an average of nine hours per week to class preparation.

Lower Division Courses

17. Shakespeare. (4) Three hours of lecture per week. Lectures on Shakespeare and reading of his best works.

24. Freshman Seminars. (4) Course may be repeated for credit as topic varies. One hour of seminar per week. Must be taken on a passed/not passed basis. The Berkeley Seminar Program has been designed to provide new students with the opportunity to explore, with a faculty member in a small seminar setting, Berkeley Seminars are offered in all campus departments, and topics vary from department to department and semester to semester.

26. Introduction to the Study of Poetry. (4) Three hours of lecture per week. Lectures and discussion on poetry intended to develop the student’s ability to understand and evaluate a poem. Designed primarily for students whose major is not English, but majors and prospective majors are welcome.

28. Introduction to the Study of Drama. (4) Three hours of lecture per week. Lectures and discussion intended to develop the student’s ability to read, understand and evaluate plays. Designed primarily for students whose major is not English, but majors and prospective majors are welcome.

31AC. Literature of American Cultures. (4) Course may be repeated for credit with different topic. Three hours of lecture per week. An introduction to the ethnic diversity of American literature. The course will take substantial amount of the literature of three or more of the following groups: African Americans, Native Americans, Asian Americans, Chicano/Latinos, and European Americans. Topics vary from semester to semester. Students should consult the department’s “Announcement of Classes” well before the beginning of the semester for details. This course satisfies the American Cultures requirement.

37. Chicano/a Literature and Culture. (4) Three hours of lecture per week. Major literary and cultural texts in the Chicano/a tradition from origins to the present.

39. Freshman Seminar. (4) Course may be repeated for credit as topic varies. Topics vary from semester to semester. Students should consult the department’s “Announcement of Classes” for current offerings well before the start of the semester. (Sections limited to 15 students each.)

45A-45C. Literature in English. (4:4:4) Three hours of lecture/seminar per week. Historical survey of literature in English from Chaucer through the 20th century. A. Literature in English through Milton. B. Literature in English from the late-17th through the mid-19th century. C. Literature in English from the mid-19th through the 20th century.

C77. Introduction to Environmental Studies. (4) Will count toward Environmental Science, Policy, and Management 10 requirement for the conservation and resource studies major. Students will not receive credit for C77 after taking either Environmental Science, Policy, and Management 10 or C12. Three hours of lecture and one and one-half hours of discussion per week. This innovative course taught by a scientist and a humanities professor surveys current global environmental issues; introduces students to the basic intellectual tools of environmental science; investigates ways the human re- lationship to nature has been imagined in literary and philosophical traditions; and examines how tools of scien- tific and literary analysis, scientific method, and imag- inative thinking can clarify what is at stake in environ- mental issues and environmental citizenship. Also listed as Undergrad Interdisciplinary Studies C12 and Env- iron Sci, Policy, and Management C12. Sposito

84. Sophomore Seminar. (1,2) Course may be repeated for credit as topic varies. One hour of seminar per week per unit for 15 weeks. One and one-half hours of seminar per week for unit for 10 weeks. Two hours of seminar per week per unit for eight weeks. Three hours of seminar per week per unit for five weeks. Sections 1-2 to be graded on a passed/not passed basis. Sections 3-4 to be graded on a letter-grade basis. Prerequisites: At discretion of instructor. Sophomore seminars are small interactive courses offered by faculty members in departments all across the campus. Sophomore seminars offer opportunity for close, regular intellectual contact between faculty mem- bers and students in the crucial second year. The top- ics vary from department to department and semester to semester. Enrollment limited to 15 sophomores.

95. Other Voices: Multicultural Literary Perspectives. (4) Course may be repeated for credit. One hour of lecture and one hour of discussion per week. Must be taken on a passed/not passed basis. This course will in- troduce students to the literary study currently being un- dertaken by English Department faculty interested in is- sues of race and class, gender and ethnicity, and the formations of minority discourse. Each week a scholar or writer will lecture on literary study that reflects cultural and social concerns. Upper division English majors will lead discussion groups focusing upon the methods ad- vocated in the lecture and on various readings. This course does not satisfy major requirements.

Upper Division Courses

100. Junior Seminar. (4) Course may be repeated for credit as topic varies. Three hours of seminar per week. Intensive study of critical and methodological problems in the study of literature. Normally fulfills one or more of the area of concentration requirements. De- signed for English majors. Topics vary from semester to semester. Students should consult the department’s “Announcement of Classes” for offerings well before the beginning of the semester.

105. Anglo-Saxon England. (4) Three hours of lecture/discussion per week. Instruction in the basic ele- ments of the Old English language with analysis of liter- ary and cultural issues relating to the formative period of the English nation. (Undergraduates who pass 105 with a grade of B+ or higher, or with per- mission of the 205B instructor, are eligible to enroll in 205B, Beowulf.)

C107. The English Bible as Literature. (4) Three hours of lecture per week. Formerly 107. Introduction to the English Bible treated as a literary work. Also listed as Religious Studies C119.

110. Medieval Literature. (4) Course may be repeated for credit with different topic. Three hours of lecture per week. Development of literary form and idiom throughout the Christian West from the first to the 15th century.

111. Chaucer. (4) Three hours of lecture per week. Lectures on and discussion of Chaucer’s major works.

112. Middle English Literature. (4) Three hours of lecture per week. Middle English literature exclusive of Chaucer studied in the original language.

114A-114B. English Drama. (4:4) Three hours of lecture per week. A. English drama to 1603. B. English drama from 1603 to 1700.

115A-115B. The English Renaissance. (4:4) Three hours of lecture per week. A. Beginnings of the English Renaissance and litera-
B. Literature of the 17th century.

117A-117B. Shakespeare. (4) Three hours of lecture per week. A chronological survey of Shakespeare's career.

117J. Shakespeare. (4) Three hours of lecture per week. Prerequisites: Consent of instructor. Study of selected plays, with practice in various critical approaches, e.g., textual criticism, changing concepts of comedy and tragedy, influence of theatrical conditions on technique.

117S. Shakespeare. (4) Three hours of lecture per week. Lectures on Shakespeare and reading of his best works.

117T. Shakespeare in the Theatre. (4) Three hours of lecture per week. An introduction to the formal and practical aspects of production, including the rehearsal process, selecting and adapting plays, and directing and acting.

118. Milton. (4) Three hours of lecture per week. Lectures on and discussion of Milton's major works.

119. The Augustan Age. (4) Three hours of lecture per week. Lectures on and discussion of Dryden, Swift, Pope, and some of their contemporaries.

120. The Age of Johnson. (4) Three hours of lecture per week. Lectures on and discussion of later 18th-century British literature.

121. Romantic Period. (4) Three hours of lecture per week. Lectures on and discussion of the major American novelists of the 19th century, including Cooper, Hawthorne, and Melville.

122. Victorian Period. (4) Three hours of lecture per week. Lectures on and discussion of the Victorian period, with an emphasis on poetry and nonfiction prose.


125C. The European Novel. (4) Three hours of lecture per week. Lectures on and discussion of major European novels.


125E. The Contemporary Novel. (4) Three hours of lecture per week. Important contemporary novels, some of which may be read in translation.


127. Modern Poetry. (4) Three hours of lecture per week. British and American poetry: 1900 to the present.

130A. American Literature: Before 1800. (4) Three hours of lecture per week. Lectures on and discussion of the major writers of the early American period.

130B. American Literature: 1800-1865. (4) Three hours of lecture per week. Lectures on and discussion of the major works of the American Renaissance.

130C. American Literature: 1865-1900. (4) Three hours of lecture per week. Lectures on and discussion of American literature from the Civil War through 1900.


133A. African American Literature and Culture Before 1917. (4) Three hours of lecture per week. Major literary and cultural texts in the African American tradition from origins through World War I.

133B. African American Literature and Culture Since 1917. (4) Three hours of lecture per week. Major literary and cultural texts in the African American tradition from the Harlem Renaissance through the 20th century.

133T. Topics in African American Literature and Culture. (4) Course may be repeated for credit as topic varies. Three hours of lecture per week. Topics vary from semester to semester. Students should consult the department's "Announcement of Classes" for offerings well before the beginning of the semester.

134. Contemporary Literature. (4) Three hours of lecture per week. Lectures on and discussion of selected works written since the Second World War.

135AC. Language and Disability. (4) Course may be repeated for credit with different topic. Three hours of lecture per week. Prerequisites: Consent of instructor. Three hours of lecture per week. A course on the relationship of language and disability, focusing on the history and current state of the relationship between language and disability.

137A. Chicana/o Literature and Culture to 1910. (4) Three hours of lecture per week. Major cultural and textual texts in the Chicana/o tradition from origins through the Mexican Revolution of 1910.

137B. Chicana/o Literature and Culture Since 1910. (4) Three hours of lecture per week. Major cultural and textual texts in the Chicana/o tradition from 1910 through the contemporary Chicana/o period.

137T. Topics in Chicana/o Literature and Culture. (4) Course may be repeated for credit as topic varies. Three hours of lecture per week. Topics in Chicana/o literature and culture.

138. Studies in World Literature in English. (4) Course may be repeated for credit with different topic. Three hours of lecture per week. An examination of various aspects of the modern literature written in English in Africa, the Caribbean, India, and Southeast Asia. Topics will vary from semester to semester. Students should consult the department's "Announcement of Classes" for offerings well before the beginning of the semester.

139. The Cultures of English. (4) Course may be repeated for credit with different topic. Three hours of lecture/seminar per week. Lectures of various regions in which English is one of the spoken languages, such as Canada, the Caribbean, Australia, Africa, India, and the knowledges of specific groups or cultural traditions in the English-speaking world, including the U.S. and the British Isles. Topics vary from semester to semester. Students should consult the department's "Announcement of Classes" for offerings well before the beginning of the semester.

150. Senior Seminar. (4) Course may be repeated for credit with different topic. Three hours of seminar per week. Majors in American literature may take the course as an independent study. Students should consult the department's "Announcement of Classes" for offerings well before the beginning of the semester.
179. Literature and Linguistics. (4) Course may be repeated for credit as topic varies. Three hours of lecture per week. Study of the English language as a medium for literature. Topics may include rhyme, aliteration, meter, poetic syntax, metaphor, irony, the language of point of view, narrative tense, orality, literacy, etc.

180A. Autobiography. (4) Three hours of lecture per week. Lectures on and discussion of autobiographical forms.

180E. The Epic. (4) Three hours of lecture per week. Reading and discussion of epics, considering their cultural and historical contexts, the nature of their composition, and the development of the form.

180H. Short Story. (4) Three hours of lecture per week. Lectures on and discussion of the form of the short story.

180L. Lyric Verse. (4) Three hours of lecture per week. Study of lyric forms and techniques.

180N. The Novel. (4) Course may be repeated for credit with different topic. Three hours of lecture per week. Study of the novel as a literary genre, its formal development and variations, its technical possibilities, its cultural functions. Topics may vary from semester to semester.

180R. The Romance. (4) Course may be repeated for credit with different topic. Three hours of lecture per week. Study of the romance as a literary genre. Topics may vary from semester to semester; focus may be historical, restricted to a particular period (e.g., medieval, modern).

Honors and Tutorial Courses

Lower Division Courses

98. Directed Group Study for Freshmen and Sophomores. (1-4) Course may be repeated for credit. Must be taken on a passed/not passed basis. Prerequisites: Lower division standing. Group study in a field that may not coincide with that of any regular course and must be specific enough to enable students to write essays based upon their studies.

99. Independent Study. (1-4) Course may be repeated for credit. Independent. Must be taken on a passed/not passed basis. Prerequisites: Open to sophomores with an overall G.P.A. of not less than 3.3. Meetings to be arranged. Reading and regular conference with the instructor in a field that shall not coincide with that of any regular course and shall be specific enough to enable students to write essays based upon their studies.

Upper Division Courses

H195A-H195B. Honors Course. (4) Three hours of lecture per week. Credit and grade to be awarded on completion of sequence. Prerequisites: Open only to senior English major honors candidates (i.e., students with an overall G.P.A. of 3.51 or higher and a G.P.A. of 3.65 or higher in courses taken at Berkeley in the major). Consent of instructor is required. This is a two-semester course, graded IP at the end of the first semester. During the second semester, each student will write an honors thesis. Completion of the thesis is required for the course. Graduates are encouraged to discuss their final projects with the instructor. There will be one hour of discussion per week.

198. Directed Group Study. (1-4) Course may be repeated for credit. Meetings to be arranged. Directed study in a field or a set of topics appropriate to each student's requirements. Meetings may be held for credit as a prerequisite. Prerequisites: Open to students who have completed 12 units of upper division English in an average of not less than B. Enrollment is restricted by university regulations. Group study in a field that shall not coincide with that of any regular course and shall be specific enough to enable students to write essays based upon their studies.

199. Supervised Independent Study for Advanced Undergraduates. (1-4) Course may be repeated for credit. Independent. Must be taken on a passed/not passed basis. Prerequisites: Open to students who have completed 12 units of upper division English with an average grade of not less than B. Enrollment is arranged. Enrollment is restricted by university regulations. Reading and conference with the instructor in a field that shall not coincide with that of any regular course and shall be specific enough to enable students to write essays based upon their studies.

246L. Literature in English 1945 to Present. (4)

250. Research Seminars. (4) Course may be repeated for credit. Two to three hours of seminar per week. Required of all Ph.D. students. Advanced study in various fields, leading to a substantial piece of writing. Students will write from seminars on their minor field. Students should consult the department's "Announcement of Classes" for offerings well before the beginning of the semester.

298. Special Studies. (4-12) Course may be repeated for credit. Independent. Normally reserved for students directly engaged upon the doctoral dissertation.

299. Special Study. (1-8) Course may be repeated for credit. Independent.Students are assigned preliminary exploration of a restricted field, involving research and the writing of a report. May not be substituted for available seminars.

302. The Teaching of Composition and Literature. (3) Course may be repeated for credit with different topic. Three hours of lecture/discussion per week. Must be taken on a satisfactory/unsatisfactory basis. Discussion of course aims, instructional methods, grading standards, and special problems in the teaching of composition and literature, with practice in handling sample essays. When given for graduate student instructors in the English R1A-R1B Program or the English 45 series, the course will include class visitation.

602. Individual Study for Doctoral Students. (1-12) Course may be repeated for credit. Independent. Must be taken on a satisfactory/unsatisfactory basis. Prerequisites: Graduate standing. Individual study in consultation with the major field adviser, intended to provide an opportunity for qualified students to prepare themselves for the various examinations required of candidates for the Ph.D. May not be used for unit or residence requirements for the doctoral degree.

Environmental Design

(College of Environmental Design)

Undergraduate Office: 232 Wurster Hall, (510) 642-6832 ced.berkeley.edu
Dean: Harrison S. Fraker Jr., M.F.A., F.A.I.A.
Associate Dean for Undergraduate Affairs: Frederick C. Collignon, Ph.D., F.A.I.A.P.

Overview

The College of Environmental Design combines in a single academic unit professional instruction in architecture, landscape architecture, city and regional planning, and environmental planning, along with related undergraduate and advanced graduate instructional programs. To prepare students for the three professions, the college is committed to improving practice, contributing to basic knowledge, and addressing ethical issues in areas related to the built environment and its natural setting. To this end, instruction, service, and research programs in this college aim at educating people to build more efficiently, more beautifully, and in ways better fitted to the multiplicity of human, social, and ecological needs.

The college consists of three departments: Architecture, City and Regional Planning, and Landscape Architecture and Environmental Planning. Undergraduate degree programs in architecture, landscape architecture, and urban studies offer unusual learning opportunities that combine general education, basic skills, and knowledge in the professional fields, with a broad introduction to the built and natural environments. All three departments offer undergraduate minor programs that are open to students majoring in other fields. No undergraduate major or minor programs are professionally accredited by their respective professions. At the graduate level, each department offers the professionally accredited master’s degree. A unique interdisciplinary program among all three departments offers a master’s degree in urban design.
And each department provides advanced graduate work leading to the Ph.D.

Undergraduate Programs

Undergraduates enroll in a four-year curriculum leading to the Bachelor of Arts (A.B.) degree with a major in architecture, landscape architecture, urban studies, or an individual major. These curricula provide a broad education based on professional competency in environmental design fields. In addition, they serve as undergraduate preparation for graduate education both in the design fields and, with properly selected elective courses, in professional business, law, and engineering. Graduates also work in related fields such as urban development, real estate, and construction.

Accreditation. In the United States, most state registration boards require a degree from an accredited professional degree program as a prerequisite for licensure. The National Architectural Accrediting Board (NAAB), which is the sole agency authorized to accredit U.S. professional degree programs in architecture, recognizes two types of degrees: the Bachelor of Architecture and the Master of Architecture. A program may be granted a five-year, three-year, or two-year term of accreditation, depending on its conformity with established standards.

Master’s degree programs may consist of a preprofessional undergraduate degree and a professional graduate degree, which, when earned sequentially, comprise an accredited professional education. However, the preprofessional degree is not, by itself, recognized as an accredited degree.

Berkeley’s four-year degree is useful for those wishing a foundation in the field of architecture, as preparation for either continued education in a professional degree program or for employment opportunities in architecturally related areas.

The four-year, preprofessional degree in landscape architecture is not accredited by the Landscape Architecture Accreditation Board (LAAB). The preprofessional degree is useful for those wishing a foundation in the field of landscape architecture, as preparation for either continued education in a preprofessional degree program or employment opportunities in entry-level professional practice.

The four-year degree in urban studies is not accredited by the Planning Accreditation Board (PAB). However, the undergraduate program may pursue graduate study in planning and various social science disciplines or employment with public agencies, nonprofit organizations, and private firms and service providers.

Admission. High school preparation for the college should include four years of mathematics, four years of English, three years of science, two years of foreign language, one year of physics, and one year of biology or other natural science. Additional preparation could include freehand drawing or introductory drafting. Transfer applicants who have completed 60 semester units should have completed the prerequisite coursework described in the Announcement of the College of Environmental Design. As admission becomes increasingly competitive, the college consistently retains those applications that demonstrate the most complete academic preparation (the fewest prerequisite courses either lacking or in progress), the highest level of scholastic achievement (indicated by the applicant’s GPA). Enrollment in the college beyond 130 semester units is not usually permitted; consequently, California community college transfer students may receive no more than 24 semester units of transfer credit. Units above 70 receive no credit. Transfer students from four-year institutions who have credit for more than 80 semester units are not normally admitted to the undergraduate program.

An undergraduate major in architecture or landscape architecture is not a prerequisite for admission to graduate study in these fields. Likewise, an undergraduate major in urban studies is not a prerequisite for admission to graduate study in city and regional planning.

Degree Requirements. The A.B. degree programs in the college require the completion of 120 units distributed according to regulations that appear in the Announcement of the College of Environmental Design, available from the Undergraduate Dean’s Office, University of California, Berkeley, 232 Wurster Hall #1800, Berkeley, CA 94720-1800.

Minor Programs. The College of Environmental Design offers several minors. Minors consist of at least five upper division courses as an optional program with two objectives: to encourage coherence in coursework taken outside the major, and to give recognized recognition to a minor program. The following minors are currently being offered to all majors: city and regional planning, ecological design, environmental design in developing countries, college or with other professional schools. An M.A. degree in design is offered for a few very students, and an interdisciplinary program offers a master’s degree in urban design.

The three departments have advanced graduate programs leading to the Ph.D. degree for students who have successfully completed one or more years of graduate teaching. A research M.S. degree in architecture also is available. These programs have limited enrollments and are not regarded as advanced degrees for professional purposes.

An undergraduate major in architecture or landscape architecture is not a prerequisite for admission to graduate study in these fields. Likewise, an undergraduate major in urban studies is not a prerequisite for upper division major design courses offered by the departments. In addition, certain upper division courses that embrace the interests of more than one department have similar standing as environmental design courses of the respective departments. Though these courses are typically staffed by more than one department, they are administered by only one. For information regarding ENV DES 1, 10A, 11B, 101, 105, 106A, 169B, or 195, contact the Department of Architecture. For information regarding ENV DES 104, 134, or 135, contact the Department of Landscape Architecture and Environmental Planning. ENV DES 201, 251, and 252 are part of the Master of Urban Design degree. For information about these courses, please contact the Graduate Office in the Department of Landscape Architecture and Environmental Planning.

For information on the Master of Urban Design degree, see the Urban Design section of this catalog.

Lower Division Courses

1. People and Environmental Design. (3) Student will receive no credit for 1 after taking 4. Three hours of lecture and one hour of discussion per week. Emphasis on environmental awareness and environmental design. Survey of relationships between people and environments, designed and non-designed. Emphasis on active learning. Sustainability as a lens for reading the landscape, introductions to literature and professional practices. (F,SP) Staff

11A. Introduction to Drawing. (4) Three hours of lecture and twelve hours of studio per week. Prerequisite: 1 or 4. Introductory studio course: freehand drawing, perspective, color, and design; theories of representation and the use of visual means to analyze and convey ideas regarding the environment. (F,SP)

11B. Introduction to Design. (4) Three hours of lecture, six hours of studio, and one hour of seminar per week. Prerequisites: 11A. Introduction to design concepts and conventions of graphic representation and material building as related to the study of architecture and landscape architecture. Drawing in plan, section, elevation, axonometric and perspective. Design projects addressing concepts of order, site analysis, scale, structure, rhythm, detail, culture, and landscape. (F,SP)

Upper Division Courses

100. The City: Theories and Methods in Urban Studies. (4) Three hours of lecture, one hour of discussion, and three to five hours of work per week for 10 weeks and one-half hour tutorial every other week. This course is concerned with the study of cities. Focusing on great cities around the world—from Chicago to Los Angeles, from Rio to Shanghai, from Vienna to New York—it is historical and contemporary patterns of urbanization and urbanism. Through these case studies, it introduces the key ideas, debates, and research genres of the interdisciplinary field of urban studies. In other words, this is simultaneously a "great cities" and "great theories" course. Its purpose is to train students in critical analysis of the socio-spatial formations of their lived world. (SP) Roy

101A. Writing about Environmental Design: Short Compositions. (2-4) Course may be repeated for credit. Three hours of lecture per week for 10 weeks and one-half hour tutorial every other week. Prerequisites: English 1B and consent of instructor. Formerly 101. An intensive workshop for students interested in writing about architecture, landscape, and the built environment. Recognizing that undergraduate students who take this course represent departments outside as well as within the College of Environmental Design, assignments are stoneflush for students of different disciplines to bring their current academic interests into play when writing about environmental design. Weekly assignments include prose readings, generally essays related to life experience. Brief reading and discussion assignments (20-40 pages). Students can expect to complete weekly writing assignments of 3-5 pages of prose. The skills will illustrate the skills involved in the craft of writing. (F) Litchez

Graduate Office: 206 Wurster Hall, (510) 642-2965

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B prefix=course satisfies R&C requirement
R prefix=course satisfies R&C requirement
AC suffix=course satisfies American Cultures requirement
*Professor of the Graduate School
Recipient of Distinguished Teaching Award
101B. Writing about Environmental Design: Longer Compositions. (2-4) Course may be repeated once for credit. Three hours of laboratory per week and one-half hour of tutorial every other week. Prerequisites: English 1B and consent of instructor. Formerly 101. This course may serve as an addendum to 101A: Short Compositions. Enrolled students are required or have elected to write a senior thesis. The objective of the course is to assist with the process of building a topic and constructing a research agenda by which the topic is explored and developed as prose. Students will write the longer composition within a support group which is both critical and encouraging of the individual effort. Topics are individually chosen but refined in concert with the instructor to ensure that the student’s objectives can be satisfied within the semester. (SP) Lifchez

105. Ecological Design. (4) One and one-half hours of lecture, one and one-half hours of discussion, and three hours of studio per week. Prerequisites: 11A, 11B, and Arch 100A. Design problems from an ecological perspective. Design studies of relationships among ecosystem, energy, and resource flows, human social and cultural values, and technological variables as they interact to produce the built environment. Staff

134. Computer Applications for Environmental Design. Two hours of lecture and four hours of laboratory per week. Prerequisites: 11B or consent of instructor. Beginning instruction and survey in the application of computers to landscape architecture, urban design, and planning. The emphasis will be on the transformation of natural drawing, design, and analysis with the use of basic Computer Aided Design (CAD) programs and geographic information systems. (F) Radke

C169A. American Cultural Landscapes, 1600 to 1900. (4) Three hours of lecture and one hour of discussion per week. Introduces ways of seeing and interpreting American histories and cultures, as revealed in everyday built surroundings—houses, highways, farms, factories, stores, recreation areas, small towns, city districts, and regions. Encourages students to read landscapes as records of past and present social relations and to speculate for themselves about cultural meaning. Also listed as American Studies C112A and Geography C161A. (SP) Groth

C169B. American Cultural Landscapes, 1900 to Present. (4) Three hours of lecture and one hour of discussion per week. Introduces ways of seeing and interpreting American histories and cultures, as revealed in everyday built surroundings—houses, highways, farms, factories, stores, recreation areas, small towns, city districts, and regions. Encourages students to read landscapes as records of past and present social relations and to speculate for themselves about cultural meaning. Also listed as American Studies C112B and Geography C161B. (SP) Groth

195. Senior Thesis. (4) Course may be repeated once for credit. Prerequisites: Limited to students with approved individual majors in the College of Environmental Design. Directed study leading to preparation of a senior thesis. (F,SP)

Graduate Courses

201. Urban Places Advanced Studio. (6) Three hours of lecture and nine hours of studio per week. Prerequisites: Students must be in the Master of Urban Design program or obtain consent of instructor. An advanced design studio involving collaborative work on problems that are in scope yet require attention to spatial organization and design details. The course is part of the Master of Urban Design program, in which exceptional planners, architects, and landscape architects partake in an intense, focused learning experience. Complex urban design problems will be explored. Emphasis will be placed on a broad, integrated approach which will take advantage of the range of professional backgrounds that the student and faculty participants bring to the studio. The work examines both public and private development opportunities and will often focus on emerging urban design issues. (F) Staff

251. Urban Places Seminar. (2) Two hours of seminar per week. Prerequisites: Students must be in the Master of Urban Design program or obtain consent of instructor. Introduction to the design of urban places for the Master of Urban Design degree. Faculty resources and issues arising in current urban design practice will be covered. (F) Staff

Environmental Science, Policy, and Management (College of Natural Resources)

Department Office: 137 Mulford Hall, (510) 643-7430
Undergraduate Student Services: 245 Mulford Hall, (510) 642-4249, (510) 642-6730
Graduate Affairs Office: 245 Mulford Hall, (510) 642-6410
emps.sph.berkeley.edu

Chairs: Nicholas Mills, Ph.D.

Visiting Chair for Instruction: Mark A. Tanove, Ph.D.

Professors
Barbara H. Allen-Diaz, Ph.D. University of California, Berkeley. Rangeland ecology and management
Miguel A. Aller, Ph.D. University of Florida. Biological control, agro-ecology
Ronald G. Amundson, Ph.D. University of California, Riverside. Pedology and isotope biogeochemistry
Douglas S. Baldwin, Ph.D. University of California, Berkeley. Biometeorology, biosphere-atmosphere trace gas fluxes
Jillian F. Banfield, Ph.D. Johns Hopkins University. Geology, environmental biogeochemistry
Reginald H. Barrett, Ph.D. University of California, Berkeley. Virology, biology and management
James W. Bartolome, Ph.D. University of California, Berkeley. Rangeland ecology and management
Steven R. Bessinger, Ph.D. University of Michigan. Conservation biology
Gregory S. Biging, Ph.D. University of Wisconsin, Madison. Forest biometrics and remote sensing
Thompson W. Bruns, Ph.D. University of Michigan. Fungal molecular evolution and ecology
John E. Cassida, Ph.D. University of Wisconsin, Madison. Pesticide chemistry and toxicology
Todt Dawson, Ph.D. University of Washington. Physiological plant ecology, stable isotope biogeochemistry
Richard S. Dod, Ph.D. University of Wales. Tree genetics and tree physiology
Sally K. Fairtax, Ph.D. Duke University. Conservation policy, public and administration
Mary K. Firestone, Ph.D. Michigan State University. Soil microbiology, nutrient cycling
Louise P. Fortmann, Ph.D. Cornell University. Natural resource sociology
Gordon W. Franke, Ph.D. University of California, Berkeley. Urban entomology
Inez Fung, Sc.D. Massachusetts Institute of Technology. Climate changes, biogeochemical cycle
Wayne M. Getz, Ph.D. University of Waterloo, Canada. Island biogeography, evolution, arthropod systems
J. Keith Gilless, Ph.D. University of Wisconsin, Madison. Forest economics
Allen H. Goldstein, Ph.D. Harvard University. Biogeochemistry, atmospheric chemistry
Peng Gong, Ph.D. University of Waterloo, Ontario, Canada. Remote sensing and GIS
Andrew Gutierrez, Ph.D. University of California, Berkeley. System ecology, biological control
John Harte, Ph.D. University of Wisconsin. Global change, Stephen Pimentel, Ph.D.
Isao Kudo, Ph.D. Osaka City University, Japan. Natural products chemistry
Robert S. Lane, Ph.D. University of California, Berkeley. Parasitology, tick biology
S. Lindsay, Ph.D. University of Wisconsin. Microbial ecology, epidemiology of bacterial plant diseases
Joe S. McBride, Ph.D. University of California, Berkeley. Forest ecology, urban forestry
Carolyn Merchant, Ph.D. University of Wisconsin. Environmental history, philosophy, ethics
Nicholas J. Mills, Ph.D. University of East Anglia, Norwich. Biological control
Katharine Milton, Ph.D. New York University. Tropical ecology of human/natural primate, diet, parasite-host interactions
Kevin O’Hara, Ph.D. University of Washington. Stand dynamics, silviculture, forest management
George F. Oster, Ph.D. Columbia University. Mathematical ecology
Nancy Peluso, Ph.D. Cornell University. Environmental sociology/resource policy
*Jerry A. Powell, Ph.D. University of California, Berkeley. Population biology and genetics, evolution
†J. Keith Gilless, Ph.D. University of Wisconsin, Madison. Resource sociology
Whitney L. Stamp, Ph.D. Yale University. Ecosystem ecology
Gregory T. Terborgh, Ph.D. University of California, Berkeley. Soil physical chemistry
Mark A. Tanove, Ph.D. Yale University. Insect neurophysiology
Loy E. Volkman, Ph.D. University of Washington. Aquatic neurophysiology, detrimental pathogenosis and host interactions
Stephen C. Welser, Ph.D. University of California, Riverside. Agriculture entomology/plant-pest interactions
*David L. Wood, Ph.D. University of California, Berkeley. Forest entomology/chemobiology
John A. Anderson (Emeritus), Ph.D. University of Wisconsin, Madison. Medical entomology, parasitology

Environmental Health Sciences

Department Office: 760 University Hall, (510) 643-5160
emps.sph.berkeley.edu

Chair: Robert Spear, Ph.D.

Professors
John Balmes, M.D. (Public Health)
John Casida, Ph.D. (Environmental Science, Policy, and Management)
Brenda Eskenazi, Ph.D. (Public Health)
S. Katharine Hammond, Ph.D. (Public Health)
James Hunt, Ph.D. (Civil and Environmental Engineering)
Catherine Koshland, Ph.D. (Public Health)
William Nazaroff, Ph.D. (Civil and Environmental Engineering)
James Robinson, Ph.D. (Public Health)
Allen Smith, M.D. (Public Health)
Mark Smith, Ph.D. (Public Health)
Mary Smith, Ph.D. (Public Health)
Robert Spear, Ph.D. (Public Health)
Ira Tager, Ph.D. (Public Health)
Edward Wei, Ph.D. (Emergency Medicine)

Associate Professor
Michael Jerrett, Ph.D. (Public Health)

Affiliated Professor
David RempeI, M.D. University of California, San Francisco

Adjunct Faculty
Richard Jackson, M.D.
Thomas McKenzie, Ph.D.
Stephen Pimentel, Ph.D.

Associate Adjunct Professors
Mark Nicas, Ph.D.
Nina Titenko Holand, Ph.D.

Program Overview

Academic degree programs in the Graduate Group in Environmental Health Sciences are recommended for individuals with clear research orientations who wish to complete work of an interdisciplinary nature. Applicants may apply to the M.S. program, the Ph.D. program, or to the joint M.S./Ph.D. program. (Continuation is contingent upon successful completion of the M.S. requirements), EHS is administered within the Division of Environmental Health and the School of Public Health. Although students receive both academic degrees from the graduate program (under the jurisdiction of the Graduate Division of the Berkeley campus), students are also affiliated with and apply to the School of Public Health. For further information, go to ehs.sph.berkeley.edu.
Oones C. Huisman (Emeritus), Ph.D. University of California, Davis. Fungal ecology, pathology, physiology
Philip T. Speidel, Ph.D. University of Oregon. Evolutionary biology and population genetics of fungi

Assistant Professors
Robert Allen, Ph.D. University of California, Berkeley. Ecology, emerging insect-borne plant diseases and insect-microbe interactions
Elizabeth Boyce, Ph.D. University of California, Berkeley. Wildlife ecology
Perry de Valinge, Ph.D. University of California, Davis. Ecology, population dynamics, mathematical modeling and statistics
Claire Kremen, Ph.D. Duke University. Conservation biology, ecology

Associate Professors
Nicholas Hall, Ph.D. Duquesne University. GIS and remote sensing
Adina Merenlender, Ph.D. University of Rochester. Ecology, conservation biology, landscape ecology

ESPM Overview
The mission of the Department of Environmental Science, Policy, and Management is to bring a di- verse research, teaching, and extension capacity to bear on environmental problems from local to global scales. The biological, social, and geophysical scientists of the department are organized into three divisions on the basis of similar disciplinary or topical research interests, but all work within the unifying framework of the analysis of environmental problems and the development of management strategies to address them. Environmental problems demand increased understanding of social, physical, and biological systems as well as the transfer of basic research findings through modeling, implementation, teaching, and extension. ESPM facilitates the cross-disciplinary collaboration necessary to address vital, contemporary questions.

The department includes three divisions: Ecosystem Science, Policy, and Management; Environmental Conservation and Resource Management; and Society and Environment. The faculty have expertise in diverse areas of critical importance to en- vironmental issues. Excellence in research and teaching in many disciplines, all brought together to focus on environmental problems, offers stu- dents the opportunity to become leaders in re- search, conservation, restoration, and manage- ment of the environment, biodiversity, and natural resources.

Facilities
The Department of Environmental Science, Policy, and Management is located among the forest, Mariposa Grove, Tuolumne Meadows, the Yosemite National Park, and Stanislaus National Forest. A number of our courses are do- cumented, forest ecology, GIS, and remote sensing.

Associate Professors
John Battles, Ph.D. Cornell University. Forest community ecology
Claudia H. Carr, Ph.D. University of Chicago. Conservation biology
Lee C. Wensel (Emeritus), Ph.D. University of Minnesota. Landscape ecology, forest management
W. Wayne Wilcox (Emeritus), Ph.D. University of Wisconsin, Madison. Bioremediation
Stanley L. Wulff, Ph.D. University of California, Berkeley. Water conservation and extension
Paul J. Zinke (Emeritus), Ph.D. University of California, Berkeley. Forest products and wood technology

*Professor of the Graduate School
†Recipient of Distinguished Teaching Award

Undergraduate Programs
Courses offered by the Department of ESPM serve students in the College of Natural Resources and across the campus in such diverse but related studies as forestry, conservation and resource sciences, botany, biochemistry, ecology, geology, entrepreneurship, and sociology. These courses are of sufficient general interest to attract students who wish to expand their intellectual horizons by learning something about environmental studies. Consult our web site for updates: espm.berkeley.edu.

Transfer Applicants
Transfer candidates should complete all lower di- vision requirements for their intended major before entering Berkeley and may be denied admission if they have not done so. General Education Transfer Curriculum (IGETC) is highly applicable to the Conservation and Re- source Studies Major and the Society and Environ- ment Major and is also applicable to other ESPM programs. In cases where the transfer in- stitution does not have a course equivalent to a specific prerequisite for the major, applicants must take the coursework the first semester of enroll- ment at Berkeley.

Summer Field Program
esp.m.berkeley.edu/summercamp/index.html
In the beautiful mountains of the Plumas National Forest, the UC Summer Field Camp provides stu- dents a unique opportunity to study the biota, soils, and geology of the Feather River Country. Tall ponderosa and sugar pines tower over the area, with white fir, Douglas fir, incense cedar, and black oak intermixed in the dense forests. Several streams pass through the camp. Housing is pro- vided in cabins and bunkhouses, with a central kitchen and dining facility and a large campfire area in front. Residents enjoy easy hiking to waterfalls, lakes, and mountain meadows.

The courses of the summer field program cover wildland ecology as forest, rangeland, and wetland management; forest resource inventory; forest products; harvesting practices; and many other subjects. During the eight-week program students acquire a broad working knowledge of the con- cepts and techniques that wildland resource man- agers use in their work. Your experiences studying forestry and wildland resources in a field setting will enrich your further academic studies at Berkeley.

The courses are an integral part of the core cur- riculum of the Conservation and Resource Studies major, as well as the Society and Environment major, but students of any major on the Berkeley campus are welcome to attend. Students may complete most requirements of the minor in forestry at at-
tending camp. Information and an application may be found at espm.berkeley.edu/summercamp/index.html. The courses that comprise the camp are ESPM 101A–101E, including Sierra Nevada Ecology, Silviculture, Inventory and Measurements, and Timber and Resource Management, for a total of 10 units.

Major in Conservation and Resource Studies
Chief Adviser: Gordon Frankie
The conservation and resource studies major is an interdisciplinary program designed for students interested in environmental issues and areas of interaction among natural resources, population, energy, technology, societal institutions, and cultural values. Students draw on the course offerings of the entire campus and appropriate community resources in the development of individual programs of study. The major’s orientation is toward flexibility and an individualized educational approach to understanding the structure and dynamic functions of complex environmental systems within our society and biosphere. It encourages interaction among students, faculty, and community.

Course requirements for the major include one ESPM environmental science course, one ESPM physical science course, and one course in the humanities at the junior and senior years, students will be expected to take two courses in reading and composition, one course in calculus or statistics. In addition, students must take one course in general biology with lab, one course each in physical sciences and the humanities; and two courses preparatory to the individual areas of interest. For transfer students, IGETC will satisfy all lower division requirements except ESPM 90. In the junior and senior years, students will concentrate on their areas of interest. A more detailed statement of major requirements is available at the ESPM web site and from the department office. Applications for on-campus transfers from other majors are reviewed once each semester. Check with the Undergraduate Services Office, 245 Mulford Hall, (510) 642-4249, for deadlines each semester.

Minor Program. A minor in conservation and resource studies is available to any Berkeley student in good academic standing. Requirements are completion of a minimum of five courses related to conservation studies totaling a minimum of 12 units. Of these five courses must be ESPM 100 and at least three courses must be upper division. All courses must be taken for a letter grade and at least a minimum of 2.0 grade points over-all. Interests are directed toward understanding the structure and function of ecosystems at the northern Sierra Nevada is required.

Major in Forestry and Natural Resources
Chief Adviser: Whendee Silver
The Major in Forestry and Natural Resources (FNR) is the result of a merger of the former majors in forestry and in resource management. Specializations in natural science and human dimensions are offered along with studies in ecology and management of forest, woodland, and grassland ecosystems. Emphases in wildlife biology, water policy, fire science, ecosystem restoration, environmental justice, remote sensing and geographical information science are available. This major prepares students for graduate school and careers in environmental consulting, public agencies, nonprofit conservation organizations, and private companies, and for professional careers in forestry, wildlife, and range management. Participation in an eight-week summer field program in the northern Sierra Nevada is required.

Accreditation and Licensing. Established in 1914, forestry at Berkeley was the first forestry degree in California to be accredited by the Society of American Foresters. Completion of the Bachelor of Science degree in forestry provides four years of credit toward meeting the required seven years of qualifying education or professional experience for licensing as a professional forester in California. Students may obtain an additional year of credit toward licensing by completing the master of forestry degree. By careful selection of electives, students who complete the Bachelor of Science degree in forestry degree can meet the U.S. Civil Service and state requirements for the forester position.

Minor Program. A minor in Forestry and Natural Resources is available for students who are interested in learning about forestry and renewable resource management as an adjunct to their chosen fields. Students in many diverse majors, such as zoology, business administration, and civil engineering, may find this minor complementary to their professional career goals.

Major in Molecular Environmental Biology
Chief Adviser: Rosemary Gillespie
The molecular environmental biology (MEB) major is designed to expose students to the organization and function of biological organisms at the molecular, cellular, organismal, and ecological levels. This breadth of this vertically integrated program is valuable in the added perspective it provides for students interested in how organisms function in their environment. Molecular approaches are expected to play an increasing role in environmental problem-solving in the near future, and educated citizens and researchers alike will need to have a grasp of basic molecular through ecological principles in order for these approaches to be effective in problem solving. This major is appropriate for pre-med and pre-vet students, as well as students interested in general biology. Students in this major have a choice of emphasis: 1) animal health and behavior, 2) biodiversity, 3) ecology, 4) environment and human health, 5) organisms and environment, and 6) microbiology.

Major in Society and Environment
Chief Adviser: Jeffrey Romm
Social and environmental problems are deeply intertwined. The Society and Environment major introduces students to the main approaches and theories for environmental social sciences, including how social science and environmental problems, and how social science theories contribute to understanding environmental problems. At the upper division level there are three major areas of emphasis. Students are exposed to all three areas and choose to focus in one: U.S. Environmental Policy and Management, Global Environmental Politics, or Environmental Justice and Development.

Graduate Programs
Graduate Student Services: 245 Mulford Hall, (510) 642-6410
Head Graduate Adviser: Mary K. Firestone
The degree programs address environmental problems of major social and political impact, which are based in the biological and physical sciences. Two general types of education are needed to produce people qualified to address these hybrid programs: (1) broadly based interdisciplinary education, and (2) disciplinary education in relevant fields supplemented with exposure to cross-disciplinary communication and problem solving. The ESPM program offers both types of education.

Interest in environmental problems has resulted in a dramatic recent increase in undergraduate and graduate programs dealing with various aspects of environmental science. Our program integrates the biological, social, and physical sciences to provide advanced education in basic and applied environmental sciences, develops critical analytical abilities, and fosters the capacity to conduct research into the structure and function of ecosystems at molecular through ecosystem scales and their interlinked human social systems.

The goal of the program is to provide both a strong disciplinary education and broadly based experience in cross-disciplinary communication and problem solving. In order to achieve this, the program leading to the M.S. and Ph.D. in environmental science, policy, and management will require that a student complete three core courses, and coursework in the following four broad areas: disciplinary emphasis, area of specialization, research methods, and breadth requirement. The graduate adviser and a guiding committee, chosen by the student and approved by the graduate adviser, will be responsible for designing a program that fulfills the degree requirements and meets the student’s needs. This program structure provides the student with flexibility for interdisciplinary interaction within the graduate program, while ensuring at least a minimum level of disciplinary competence and understanding.

Three Fields of Emphasis
Students will be required to demonstrate competence in one of the fields of emphasis described below. Specific coursework within each field will be chosen by the guiding committee in conjunction with the student and approved by the graduate adviser. The three fields provide flexibility within a clear program structure.

a. Disciplinary Emphasis
The disciplinary emphasis is the broadest academic area encompassing the student’s interests. Currently the three disciplinary emphases within the department are ecosystem sciences, organisms and environment, and society and environment. A student pursuing a strongly interdisciplinary program may study more than one of these disciplines in depth.

Ecosystem Sciences. The Ecosystem Sciences Division increases knowledge of the biological, chemical, and physical processes that determine terrestrial ecosystem dynamics in order to provide a scientific basis for management and to analyze the adverse stresses that places on terrestrial ecosystems. Central to this is collaboration between biological and physical scientists, leading to an integrated understanding of ecosystem complexity, structure, and function and the extension of basic research findings through modeling, implementation, and educational activities. The principal research and teaching efforts are directed toward forests, grasslands, and agricultural lands, including their interactions with contiguous aquatic, wetland, and marine ecosystems and the atmosphere. Investigation is carried out over a wide range of spatial and temporal scales, with emphasis on extending understanding of processes derived from research at smaller scales to land-scape, regional, and global scales. The role of human activities, including ecosystem management scenarios, is an integral component.

Organisms and Environment. The mission of the Division of Organisms and Environment is to use fundamental research on insect systems to address critical environmental issues and to solve vital environmental problems. Research interests in this division are wide ranging, from the molecular and physiological aspects of ecosystems, providing a strong integration of biological processes and a diversity of intellectual challenges for graduate students. Systematics and biodiversity, behavior and neurobiology, and molecular and biological contributions in Organisms and Environment. Other research emphases include environmental toxicology, medical entomology, and insect-microbe interactions.
Society and Environment. Faculty and students of the Division of Society and Environment study how social distributions of power and resources affect environmental dynamics and their consequences. Research and teaching focus on how cultural, social, political, and economic institutions affect the treatment of natural resources and interventions with environmental phenomena; and on the practice, processes, methods, and implications of forming, choosing, and applying policy and management regimes in different institutional frameworks and environmental settings. This knowledge is applied to concrete problems in human-ecosystem relations from local to global scales in a wide variety of cultural and historical contexts. Theories and methods are chosen from the full range of scientific fields to address human and ecosystem processes and their interactions with environmental phenomena; and on the practical processes, methods, and implications of forming, choosing, and applying policy and management regimes in different institutional frameworks and environmental settings.

b. Area of Specialization

The area of specialization is a narrower field within the context of the disciplinary emphasis. Some examples of these areas are microbial community ecology, ecosystem function, insect population and community ecology, biological control of arthropods, insect conservation biology, American environmental history and policy, international forest management, biogeochemistry, Mediterranean grassland ecosystems, remote sensing, and forest management.

c. Research Methods

Candidates for the Ph.D. must demonstrate competence in research techniques appropriate for the discipline and area of specialization. Preparation in this field must include experimental design, sampling design, estimation, and hypothesis testing.

d. Breadth Requirement

Each student’s program must include coursework addressing human and ecosystem processes and the relationship between them. All students must complete an area requirement, an area of specialization, and a breadth program. Preparation in this field must include experimental design, sampling design, estimation, and hypothesis testing.

Required Core Courses

All master’s and doctoral students in ESPM are required to take a core course sequence. The first required course, ESPM 201A, requires 3 upper division and graduate courses of which at least 1 must be taken before, or before progress, when the doctoral oral qualifying examination is held. Master's students are not required to take 201C. ESPM 201S, Environmental Science, Policy, and Management (3 units), is required for all doctoral students and must be taken once before the oral qualifying examination. ESPM 201S may be repeated for credit.

Students are also required to complete a minimum of 6 units in their area of specialization. In addition, students must complete one additional course in the application of social sciences to environmental problems, and students in social sciences must complete one additional course in environmental law or policy. The Guiding Committee and the head graduate adviser will approve the selection of appropriate courses to meet these course requirements.

Admission to the Graduate Program

Applicants for admission to the graduate program must hold a bachelor’s degree from a university or college with curricula and standards equivalent to those of the University of California. The completed undergraduate program should normally be in a field relevant to the disciplinary emphasis chosen. Applicants without this background may be admitted with the understanding that their coursework must compensate for their preparation. We suggest that prospective applicants consult with the graduate Student Services Office for advice on what courses may be recommended.

It is critical that all applicants identify on their application faculty whose research and work overlap with their interests. Within this information, the admission committee will not be able to evaluate your application properly. You may wish to contact faculty during the application process, but it is not required. Faculty sponsorship of entering graduate students will be determined once all applications have been reviewed and final admission offers have been made. The ESPM admission committee, not individual faculty, makes the final decisions on who will be offered admission to the program. Applications are accepted for the fall semester only.

Research Facilities

Departmental facilities of high quality are available to support graduate student research and education. Facilities include state-of-the-art instrumentation and a large, modern laboratory facility. The department houses an outstanding entomological museum that supports both teaching and research programs in insect systematics and ecology.

Master of Forestry (M.F.)

Graduate Adviser: Kevin L. O’Hara

The Master of Forestry degree is the advanced professional degree, granted by the Department of Environmental Science, Policy, and Management. The student who has completed an undergraduate training in forestry is usually already broadly trained in the principles of forestry but has not yet developed proficiency in the application of these principles to diverse problems involved in professional practice. The M.F. program is designed to advance the student’s understanding of the essentials of professional forest management at the graduate level within the context of resource and environmental planning of sustainable management regimes.

The M.F. program consists of three components: coursework, an internship, and a professional paper. The coursework consists of 24 semester units of upper division and graduate courses of which at least 12 units are at the graduate level. The program of study must be approved by the graduate adviser and guiding professor as constituting appropriate advanced specialized training in professional forest resource management. The internship, normally with a public or private forest land management organization, provides direct experience in the application of theory to professional practice and may be completed in a single academic term. The professional paper must be completed within one semester and must, in all cases, be accepted and approved by the guiding professor and graduate adviser.

Upon completion of the program, coursework, and approval of the professional paper, the student’s academic performance will be assessed, and a final grade of pass or failure will be awarded. A grade of pass must be completed within one semester and must, in all cases, be accepted and approved by the guiding professor and graduate adviser.

For information about the M.S. degree in range management, see the Department of Environmental Science, Policy, and Management section of this catalog. Additional information about the graduate programs offered by the Department of Environmental Science, Policy, and Management may be obtained from the Graduate Student Services Office, 245 Mulford Hall, (510) 642-6410; fax: (510) 642-4034; e-mail: espmgrad@nature.berkeley.edu, espm.berkeley.edu/gradprograms/grad_programs_msr.html.

Lower Division Courses

Basic Environmental Topics

2. The Biosphere. (3) Three hours of lecture and one hour of discussion per week. An introduction to the principles and fundamental concepts underlying our scientific understanding of the biosphere. Topics covered include the phylogeny of life on earth; nutrient cycles and factors regulating the chemical composition of water, air, and soil; the architecture and physiology of life; population biology and community ecology; human dependence on the biosphere; and the beneficial and harmful effects of human interventions in the biosphere. (F) Staff

4. Environmental Chemistry. (2,3) Three hours of lecture and one hour of discussion per week. An introduction to the principles and fundamental concepts underlying our scientific understanding of the biosphere. Topics covered include the phylogeny of life on earth; nutrient cycles and factors regulating the chemical composition of water, air, and soil; the architecture and physiology of life; population biology and community ecology; human dependence on the biosphere; and the beneficial and harmful effects of human interventions in the biosphere. (F) Staff

6. Environmental Biology. (3) Three hours of lecture and one hour of discussion per week. An introduction to the principles and fundamental concepts underlying our scientific understanding of the biosphere. Topics covered include the phylogeny of life on earth; nutrient cycles and factors regulating the chemical composition of water, air, and soil; the architecture and physiology of life; population biology and community ecology; human dependence on the biosphere; and the beneficial and harmful effects of human interventions in the biosphere. (F) Staff

9. Environmental Science Case Study Seminar. (3) Three hours of seminar per week. Using a field intensive seminar format, the course will introduce lower division students to the process of addressing real environmental problems. Throughout a progression of case studies, students will learn to identify research design and implementation approaches. By the end of the semester, they will be able to frame a researchable question, design a protocol for gathering relevant information, analyze the data, and present an objective conclusion. Throughout the semester, students will present case study results in oral and written form. (SP) Fairfax, Spencer

Environmental Issues

C10. Environmental Issues. (4) Three hours of instruction per week. A general course designed to introduce students to the real world of environmental issues and their relationship to human society and the natural environment. Case studies of ecosystem maintenance and disruption. Issues of economic development, population, energy, resources, technology, and alternative
Environmental Policy and Management

50AC. Introduction to Culture and Natural Resource Field Study. (3) Three hours of lecture and three hours of field study per week. Formerly SPOS 172. This course is designed to introduce students to the major sampling and measurement concepts in grassland, forest, wildland and urban ecosystems. (F,SP)
39. Freshman/Sophomore Seminar. (1-3) Course may be repeated for credit as topic varies. One hour of seminar per week per unit. Sections 1-4 to be graded on a passed/not passed basis. Sections 5-9 to be graded on a pass/fail basis. Prerequisites: Priority given to freshmen and sophomores. Freshman and sophomore seminars offer lower division students the opportunity to explore an intellectual topic with a faculty member in a small-seminar setting. Freshman Seminars are offered in all campus departments, and topics may vary from department to department and semester to semester. Enrollment limited to 15 freshmen. (F,SP) Staff

40. Insects and Human Society. (2) Two hours of lecture per week. Prerequisites: Knowledge of natural history of insects in natural and human environments. This course examines the interactions of insects, their interactions with the living world, and their contributions to and impacts on human society. (F,SP)

42. Natural History of Insects. (2) Two hours of lecture per week. Prerequisites: Knowledge of natural history of insects in natural and human environments. This course examines the interactions of insects, their interactions with the living world, and their contributions to and impacts on human society. (F,SP)

44. Biological Control. (2) Two hours of lecture per week. Prerequisites: Knowledge of natural history of insects in natural and human environments. This course examines the interactions of insects, their interactions with the living world, and their contributions to and impacts on human society. (F,SP)

98. Directed Group Study in ESPM. (1-3) Course may be repeated for credit. One hour of laboratory/discussion per week. Must be taken on a passed/not passed basis. Prerequisites: Consent of instructor. May be repeated for credit. (F,SP) Staff

99. Supervised Independent Study and Research. (1-3) Course may be repeated for credit. May be repeated for credit. Meetings must be taken on a passed/not passed basis. Prerequisites: Lower division standing (3.4 GPA or better), consent of instructor, adviser, and department chair. Students must submit a proposal for the independent study or research on topics relevant to department that are not covered in depth by other courses. Open to students in good standing who, in consultation with a faculty sponsor, demonstrate exceptional interest in a well-defined topic. (F,SP) Staff

Upper Division Courses

100. Environmental Problem Solving. (4) Three hours of lecture and one and one-half hours of discussion/demonstration per week. Prerequisites: Course in one discipline or statistics course in mathematics or statistics course in social science or economics course in philosophy. Analysis of contrasting approaches to understanding and solving environmental and resource management problems. Case studies and hands-on problem solving that integrate concepts, principles, and practices from physical, biological, social, and economic disciplines. Their use in environmental policies and resource management plans. (F) Frankie

102A. Terrestrial Resource Ecology. (4) Three hours of lecture and four hours of laboratory per week. Prerequisites: Course in one discipline or statistics course in mathematics or statistics course in social science or economics course in philosophy. Provides a foundation in terrestrial ecology. Organized around five topics: environmental biophysics, ecosystem carbon balance, ecophysiology, population ecology, community ecology. Examines how each contributes to understanding of distribution and abundance of organisms in biosphere. Laboratory exercises, a mandatory weekend field trip, and a group research project provide opportunities to explore questions in depth. Emphasis on building quantitative understanding of ecological phenomena. (F) McBride

102B. Natural Resource Sampling. (2) Two hours of lecture per week. Prerequisites: Statistics 2 or 20. This laboratory course is designed to introduce students to the major sampling systems used in natural resource ecology. It also introduces students to important sampling and measurement concepts in grassland, forest, wildlife, insect, soil, and water resources. (F) Allen-Diaz

102BL. Laboratory in Natural Resource Sampling. (2) Four hours of discussion/laboratory per week. Prerequisites: Statistics 2 or 20. This laboratory course is designed to introduce students to the major sampling systems used in natural resources and ecology. Field data is collected with various important sampling designs and analyzed. Mean values and confidence intervals are constructed from the data collected in this course. (F) Allen-Diaz

102C. Resource Management. (4) Three hours of lecture and three hours of laboratory per week. Prerequisites: Calculus I and II or equivalent. Provides a foundation in public and private natural resource management decision making. The focus is on goals, criteria, data, models, and technology for quantifying and communicating the consequences of planning options. A range of contemporary air, water, and land use problems is discussed. (SP) Staff

102D. Resource and Environmental Policy. (4) Three hours of lecture and one hour of discussion per week. Prerequisites: Environmental Economics and Policy I or one lower division environmental science course, or consent of instructor. The course develops capacities to analyze and affect the course, dynamics,
and consequences of resources and environmental policy formation and execution. It develops concepts of public policy and how cultural, legal, political, eco-
nomic, and social-economic processes form, execute, and modify it. It examines the causes and outcomes of politics among groups defined by race, ethnicity, class, and scientific-religious identities and analyzes the role that create or mitigate, or even undermine, inequalities among racial/ethnic groups. It ex-
amines the social and environmental consequences of resource policies as well as alternative policies and processes. This course satisfies the American Cultures requirement. (SP) Romm

C103. Principles of Conservation Biology. (4) Three hours of lecture and one and one-half hours of discussion per week. Prerequisites: Biology 1A-1B or equivalent. A survey of the principles and practices of conservation bi-
ology. Factors that affect the creation, destruction, and distribution of biological diversity at the level of the gene, species, and ecosystem are examined. Tools and manage-
ment options derived from ecology and evolutionary biology that can recover or prevent the loss of biological diversity are explored. Also listed as Integrative Biology C156. (F,SP) Beissinger

C104. Modeling and Management of Biological Re-
sources. (4) Three hours of lecture and three hours of computer laboratory per week. Models of population growth, chaos, life tables, and Leslie matrix theory. Hamiltonian population theory. Methods of anal-
yzing population interactions, predation, competition. Fisheries, forest stands, and insect pest management. Genetic aspects of population management. Mathe-
matical models of population growth. Quantitative analysis of simple and differential equations. Use of simulation packages on microcomputers (previous experience with computers not required). Also listed as Environmental Economics and Policy C115. (SP) Getz

Biology and Conservation

106. American Wildlife: Identification and Conser-
vation. (3) One hour of lecture and three hours of laboratory per week, plus four Saturday field trips. Identification of native wildlife of North Amer-
ica, with emphasis on species with important ecological and recreational value. The conservation of rare and endangered species is highlighted. (F) Barnett

C107. Biology and Geomorphology of Tropical Is-
lands. (13) Nine hours of lecture for 6 weeks; field pro-
jects for 6 weeks; three hours of lecture for 3 weeks. Natural history and evolutionary biology of island ter-
restrial and freshwater organisms, and of marine or-
ganisms in the coral reef and lagoon systems will be studied. Biological morphology of volcanic islands, coral reefs, and reef islands will be discussed. Fea-
tures of island biogeography will be illustrated with top-
ics linked to subsequent field studies on the island of Manu, Peru (non-credit). Also listed as Integrative Biology C158. (F,SP) Staff

108A. Trees: Taxonomy, Growth, and Structures. (2) Three hours of lecture and three hours of laboratory per week. Study of trees and associated woody species including their taxonomy and distribution, modes of shoot growth and diameter growth, and stem structure. Modes of stem structure and growth will be considered in relation to habitat and life cycles, and to suitability for timber value. Instruction in oral communica-
tion. Oral presentation required. (F,SP) Dodd

108B. Forest Genetics. (3) Two hours of lecture and one hour of discussion per week. Prerequisites: Biology 1A-1B or equivalent. Course covers basic mech-
nisms of inheritance for understanding principles of population genetics and analysis of quantitative traits. It deals with methods of measuring and interpreting quantitative genetic variation in trees. Examples of the
torical aspects of genetics are used to understand patterns of genetic variation in natural populations of forest trees and to conservation biology, and their implications for developing strategies for com-
mercial programs of forest tree improvement. (F) Dodd

109. Range Plants. (3) Two hours of lecture and three hours of laboratory per week. Systematic relationships and identification of range grasses, forbs, and shrubs;

110. Primate Ecology. (4) Three hours of lecture and one hour of discussion per week. This course exam-
ines the comparative ecology of sympatric species of Central and South America, Africa, and Southeast Asia. In addition to primate ecol-
yogy, students will master comparative information on the three main tropical forest regions of the world and examine the roosting behaviors, foraging, and densities of each species in this area. Milton

111. Ecosystem Ecology. (3) Three hours of lecture per week. Prerequisites: Biology 1B. Formerly C111, Integrative Biology C155. This course will develop prin-
ciples of ecosystems ecology, emphasizing terrestrial ecosystems. These principles ap-
ply to ecosystem recovery and to regional and global fluxes of carbon and nutrients. (SP) Battles, Silver

112. Microbial Ecology. (3) Two hours of lecture and one hour of discussion per week. Prerequisites: Biology 1A and Biology 1B: Molecular and Cell Biology 102 is recommended. Introduction to the ecology of mi-
croorganisms. Topics include the ecology and evolution of microorganisms and their relationship with each other and the environment. The role and function of mi-
crobes in several ecosystems is also discussed. (SP) Staff

113. Insect Ecology. (2) Two hours of lecture per week. Prerequisites: Biology 1B or consent of in-
structor. Ecology of insects: interactions with the phys-
ical environment; structure and functioning of insect populations and communities; behavioral ecology of predator-prey interactions; plant-insect interactions; spe-
cial insects; pollination biology; applied insect ecology. (SP) Welter

114. Wildlife Ecology. (3) Two hours of lecture and one hour of discussion per week. Prerequisites: Upper division standing. Introduction to wildlife ecol-
yology and its relationship to management programs. Includes population, community, and ecosystem lev-
els of organization, followed by selected case studies. (F) Brashears

115B. Biology of Aquatic Insects. (3) Two hours of lecture and three hours of laboratory per week. Prerequisites: Introductory course in a biological science. Identifica-
tion and ecology of aquatic insects, including their role as indicators of environmental quality. Offered odd-numbered years. (F) Reston

116B. Range Ecology, Improvements, and Man-
agement. (3) Three hours of lecture per week. Prerequisites: One course in ecology. The ecological ba-
sis for range management activities, considered in the context of western range ecosystem types. Specific range management strategies and practices are discussed in the context of ecosystem processes. (SP) Allen-Diaz, Bartolome

116C. Tropical Forest Ecology. (3) Three hours of lecture per week. Prerequisites: One course in ecology and one course in chemistry or consent of instructor. Introduction to the ecology of terrestrial tropical ecosystems, with particular emphasis on neotropical forests. Explores unique aspects of tropical ecosystems, es-
pecially nutrient cycles, net primary productivity, bio-
logical diversity, forest structure and function, distur-
turbance ecology, and the natural history of key forest ecosystems. Basic ecology is integrated with discussion of human disturbances, restoration of tropical ecosystems, and the global importance of tropical forests. (SP) Silver

117. Urban Garden Ecosystems. (4) Three hours of lecture and three hours of laboratory per week. An ecosystem approach to the study of urban gardens with an organic perspective. Topics include funda-
mentals of horticulture, soil properties and fertility, pest and disease management, and food preservation. Lab-
oratories include methods in garden design, plant prop-
gagation, compost technique, soil preparation, irrigation systems, pest management, individual or group pro-
jects, demonstrations, and discussions. Enrollment may be limited. (F) Albini

118. Agricultural Ecology. (3) Three hours of lecture per week. Prerequisites: Consent of instructor. Ex-
amines in a holistic framework fundamental biological, chemical, and economic processes that govern agroecosystem productivity and stability. Man-
agement techniques and farming systems’ designs that sustain long-term production are emphasized. One Sat-
urday field trip and one optional field trip. (F) Alitieri

119. Chemical Ecology. (2) Two hours of lecture per week. Prerequisites: Introductory courses in organic chemistry and biology or consent of instructor. Plants and their effects on animals, hormonal interac-
tions between plants and animals, feeding preferences, animal pheromones, and defense substances, bio-
chemical interactions between higher plants, and phy-
toalexins and phytotoxins. (F) Kubo

Soil, Water, Atmosphere

120. Soil Characteristics. (3) Three hours of lecture per week. Prerequisites: Chemistry 1A, 3A. Introduction to physical, engineering, chemical, and biological proper-
ties of soil. Methods of soil description, classification, geographic distribution and uses; the role of soil in supplying water and nutrients to plants; and soil or-
ganisms. Soil management for agriculture, forestry, and urban uses will also be discussed. Includes a Saturday field trip. (F) Amundson

121. Development and Classification of Soils. (3) Three hours of lecture per week. Prerequisites: Earth and Planetary Sciences 100A-100B, and Chemistry 1A, 3A recommended. Development, morphology, and classification of soils as related to geology, environ-
mental factors, and time. Soils as functioning parts of ecosystems; use of soils in archeological and paleo-
climatic studies; anthropogenic effects on soil ecosys-
tems. Offered even-numbered years. (SP) Amundson

122. Field Study of Soil Development. (1) Five day-
long Saturday field trips to locations in central California. Hands-on study of soil development and morphology. Methods of soil morphology; soil horizons; study of factors controlling soil development; relationship of soil morphology to land use; quaternary geology of central California; use of soils in dating landscapes. Offered even-numbered years. (SP) Amundson

126. Environmental Soil Chemistry. (3) Three hours of lecture per week. Prerequisites: Chemistry 1A, 3A, and Math 16A or equivalent. Recommended: 120, 121 or EPS 50 or equivalent. Focus on processes controlling distribution, solubility, and biological availability of en-
vironmentally important elements in soils. Covers role of soil minerals and organic materials in controlling re-
tention and release of soluble ions and molecules; re-
action mechanisms; and energetics. Applies principles and concepts of soil chemistry to different environ-
mental conditions in soils, aeration, water potential, and salinity, to predict changes in chemical behavior. (SP) Staff

C128. Environmental Aquaeous Geochemistry. (3) Three hours of lecture per week. Prerequisites: Civil Engineering 111 or equivalent. Chemical mechanisms of reactions controlling the fate of pollutants in the aquatic environment. Chemical reactions in sub-
surface waters. Geochemical pathways of detoxifica-
tion. Chemical modeling of pollutant geochemistry. Also listed as Civil and Environmental Engineering C116. (SP) Sposito

C129. Biometry. (3) Three hours of lecture per week. Prerequisites: Chemistry 3A, 16A or equivalent, Physics 10, or consent of instructor. Formerly 129. This course describes how the physical environment (light, wind, temperature, humidity) of plants and soils affects the physiological status of plants and how plants affect their physical environment. Using experimental data and theory, it examines physical, biological, and chem-
ical processes affecting transfer of momentum, energy, and material (water, CO2, atmospheric trace gases) between plant, soil, and atmosphere. Plant biome-
teochemistry instrumentation and measurements are also discussed. Also listed as Earth and Planetary Science C129. (F) Baldocchi

B prefix=course for business majors
H prefix=honors course
R prefix=course satisfies R&K requirement
C prefix=course satisfies American Cultures requirement
*Professor of the Graduate School
Recipient of Distinguished Teaching Award
Environmental Science, Policy, and Management / 263
Environmental Microbiology

C130. Water in Terrestrial Environment, (3) Three hours of lecture per week. Prerequisites: Chemistry 1A, 1B, 2A, 2B, 3A, and 3B, or consent of instructor. Formerly 130L. Terrestrial environment including lower atmosphere, landscape, water, soil, geologies, and nutrient cycles. Hydrology, microbiology, and impact of natural resources development and disposal of wastes on environment. Development of quantitative insights through problem solving. Also listed as Geography C136.

131. Soil Microbial Ecology, (3) Three hours of lecture per week. Prerequisites: Biology 1A-1B. Microbial com- positions in soils; diversity, activity, and function in the context of biogeochemical cycling, plant-microbe interactions, evolution, global environmental change, and biogeochemical cycles. Offered odd-numbered years. (F) Firestone

132. Spider Biology, (4) Two hours of lecture and three hours of laboratory per week. Prerequisites: Biology 1A-1B. Ecology, behavior, and adaptations of spiders. Ecological interactions of these arthropods due to modern human policies of land use and management. (F) Roderick

133. Forest, Insects, and Diseases in Forest Ecosystems, (3) Two hours of lecture per week and four one-to-two-day field trips. Prerequisites: One course in bi- ology. Study of the influence of fire, insects, and diseases on species diversity, succession, and the survival of North American forests including the evolution of these interactions due to modern human policies of preservation and management and exploitation. (F) Bruns

136. Forest Health, (3) Two hours of lecture and three hours of laboratory per week. Prerequisites: 101A-101B, 185, senior standing, and consent of instructor. Examine the biology and ecology of forest insects and pathogens; their impacts on forest ecosystems, and their interactions with other disturbances. Explore for- est health concepts in terms of the frequencies and severities of these disturbances from utilitarian and ecosystem perspectives. (SP) Staff

138. Introduction to Comparative Virology, (4) Three hours of lecture per week. Prerequisites: Introductory course in biology or equivalent and introductory biology (1A-1B or equivalent) and general biochemistry (100 or equivalent—preferably completed but may be taken concurrently). This course focuses on the molecular mechanisms of viral reproduction, including the analysis of physiological systems at the cellular level. The roles of the viral and eukaryotic genomes in coordinating physiological processes are emphasized. (SP) Tanouye

145. Arthropod-Borne Zoonotic Diseases: Basic Principles and Methods, (3) Three hours of lecture per week. Prerequisites: 146 or consent of instructor. Formerly 246. This course will focus on the ecology and epidemiology of zoonotic disease agents transmitted to humans. The principles of disease transmission will be discussed, and techniques for conducting field and laboratory studies will be demonstrated. Includes methods for collecting bloodsucking arthropods and trapping. Offered even-numbered years for study; and examination of arthropod and vertebrate tissues for pathogens. Offered even-numbered years. (SP) Lane

146. Medical/Veterinary Entomology, (3) Two hours of lecture and one hour of demonstration/discussion per week. The role of insects and other arthropods in the transmission and causation of diseases in humans and domestic animals, including the geographical areas and types of ecosystems inhabited by various species and the structural/behavioral adaptations associated with parasitism. Insect-borne diseases considered include malaria, yellow fever, plague, typhus, filariasis, African and American trypanosomiasis, Lyme disease, Rocky Mountain spotted fever, relapsing fevers. Offered odd-numbered years. (SP) Lane

146L Medical and Veterinary Entomology Laboratory, (1) Three hours of laboratory per week. Laboratory identification of the major arthropod vectors of disease agents to humans and other animals, and study of the structural/behavioral adaptations associated with free-living and parasitic stages and with blood feeding. Offered even-numbered years. (SP) Lane

147. Field Entomology, (1) Course may be repeated for credit up to four times. One week involving 60 hours of laboratory work and one hour of lecture. Offered four times per year. Prerequisites: 42, 140, or consent of instructor. Field observation, recording and interpretation of insect relationships to habitats, their behavior and plant-insect interactions. Collection and preparation of insects from important biological data. (F,SP) Staff

148. Pesticide Chemistry and Toxicology, (3) Three hours of lecture per week. Prerequisites: Introductory courses in organic chemistry and biology, or consent of instructor. Chemical composition of pesticides and related compounds, resistance mechanisms, and methods of evaluating their safety and activity. Offered odd-numbered years. (SP) Casida

148L Pesticide Chemistry and Toxicology Laboratory, (3) Three hours of lecture per week. Prerequisites: Intro- ductory courses in organic chemistry and biology, or consent of instructor. Chemical composition of pesti- cides and related compounds, their mode of action, resistance mechanisms, and methods of evaluating their safety and activity. Also listed as Nutritional Science and Toxicology C114. (SP) Casida

149. Human Diet, (4) Three hours of lecture and one hour of discussion per week. Prerequisites: C149 or equivalent. An examination of the human dietary niche, biological variation related to diet, diet and disease, domestication of staple crops, food processing techniques and development of regional cuisines, modern diets and their problems, food security and hunger, healthy diets, eating patterns of different cultural groups, and hunger. Also listed as Nutritional Science and Toxicology C159. (SP) Milton

Environmental History, Philosophy, and Ethics

160A. American Environmental and Cultural History, (4) Three hours of lecture and one and one-half hours of discussion per week. Formerly 160C. History of the American environment and the ways in which different cultural groups have perceived, used, managed, and conserved it from colonial times to the present. Cultures include American Indians and African Americans. Natural resources development includes gathering-hunting-fishing; farming, min- ing, ranching, forestry, and urbanization. Changes in attitudes and behaviors toward nature and past and present conservation and environmental movements are also examined. Also listed as History 120AC. This course fulfills American Studies requirements. (F) Merchant

161. Environmental Philosophy and Ethics, (3) Two hours of lecture and one hour of discussion per week. Prerequisites: 100 or consent of instructor. A critical analysis of human environments as physical, social, economic, and technocultural ecosystems with emphasis on the role of ideologies, beliefs, attitudes, and behavior. An examination of contemporary environ-
162. Bioethics and Society, (4) Three hours of lecture and one hour of discussion per week. Exploration of the ethical dilemmas arising from recent advances in the biomedical sciences: genetic engineering, sociobiology, health care delivery, behavior modification, patients’ rights, social or private control of research. (SP) Winickoff

163AC. Environmental Justice: Race, Class, Equity, and the Environment, (4) Students will receive no credit toward fulfilling the 120 requirement after taking Sociology 128. Deficiency in Sociology 128 may be removed by taking 163AC. Two hours of lecture and one hour of discussion per week. Overview of the field of environmental justice and the implications of class, race, and ethnicity on environmental degradation and regulation. Environmental justice movements and struggles within poor communities and communities of color. Conceptual frames, arguments, current research, and strategies for achieving environmental and labor justice. Also listed as Sociology 128AC. This course satisfies the American Cultures requirement. (F) O’Rourke

Rural and International Development

165. International Rural Development Policy, (4) Three hours of lecture and one hour of discussion per week. Comparative analysis of policy systems governing natural resource development in the rural Third World. Examination of organization and functions of agricultural and mineral development, with particular consideration of rural hunger, resource availability, technology, and patterns of international aid. (SP) Carr

166. Natural Resource Policy and Indigenous Peoples, (4) Three hours of lecture and one hour of discussion per week. Prerequisites: 165 (formerly CRS 163) or consent of instructor; upper division standing. Critical analysis of the historical transformation of indigenous peoples and their environments in North America and the Third World. The origins and specific patterns of socio-economic problems in these areas, existing and alternative future development policies and their effects. (SP) Staff

167. Environmental Health and Development, (3) Three hours of lecture per week. Impact of environments on human health and development. Indicators and tools for assessing environmental health. Analysis of the human health impact of environmental pollution and the potential for institutional systems to address environmental health. (SP) Staff

168. Political Ecology, (4) Three hours of lecture and one hour of discussion per week. Analysis of environmental problems in an international context with a focus on politics, economics, sociopolitical, resource access, and representations of nature. Discussion of the ways in which film, literature, and the news media reflect and influence environmental politics. Approaches to policy analysis arising from recent social theory. (SP) Peluso

169. International Environmental Politics, (4) Three hours of lecture and one hour of discussion per week. The dynamics of international politics are examined over the last 25 years. Attention is paid to different perspectives in international relations and in environmental politics, the origins involved, how well international agreements address the problems they are supposed to solve, and the main debates in the field, including trade-environment conflicts, international justice issues. Issues covered vary, but may include climate change, biodiversity, population, and toxins. (F) O’Neill

Resource Assessment and Evaluation

172. Photogrammetry and Remote Sensing, (3) Two hours of lecture and three hours of laboratory per week. Prerequisites: Geometry, algebra, and trigonometry. This course introduces the concepts and principles of photogrammetry and remote sensing, specifically aerial photography, as important data collection and analysis tools for natural resources management and planning. Data collected includes spatial data such as ecology, geography, geology, civil engineering, and environmental design. Photo measures of scale, area, and object height, flight planning, an introduction to the electromagnetic spectrum, photo interpretation, digital remote sensing, and data management in geographic information systems will be discussed. (SP) Gong

178A. Introduction to Environmental Education, (4) Three hours of lecture, one hour of discussion, and two hours of fieldwork per week. Prerequisites: Upper division standing, consent of instructor. An introduction to different theories of cognitive development and the practices of curriculum design and lesson presentation for environmental education. Ecology and natural resource management are analyzed in the context of cultural development. Students create lesson plans integrating core concepts and their knowledge of local environmental issues. Lessons are presented to Bay Area schools or environmental education organizations. Students will present lessons in field and classroom settings. (F,SP) Fairfax, Spencer

178B. Environmental Education Practicum, (3-4) One hour of lecture and eight to eleven hours of fieldwork per week. Prerequisites: 178A and/or consent of instructor. Students are teaching fellows in local schools or community organizations. Students will develop and present an environmental science curriculum and mentor students in 178A. Includes classroom management, lesson planning, presentation skills, and recording educational evaluations. Variable hours depending on field commitment. (F,SP) Fairfax, Spencer

Resource Management

C180. Air Pollution, (3) Three hours of lecture and one hour of discussion per week. Prerequisites: Chemistry 1A-1B, Physics 8A or consent of instructor. An introduction to air pollution and the chemistry of earth’s atmosphere. Emphasis on natural processes controlling trace gas concentrations in the atmosphere, and how anthropogenic activity has affected those processes at the local, regional, and global scales. Specific topics include stratospheric ozone depletion, increasing concentrations of greenhouse gases, smog, and changes in the oxidation capacity of the troposphere. Also listed as Earth and Planetary Science C180. (F) Goldstein

181. Wildland Fire Science, (3) Two hours of lecture and three hours of laboratory per week. Prerequisites: Consent of instructor. Fundamentals of wildland fire including fire behavior modeling, fire history methods, prescribed fire techniques, fire ecology, fire management, wildland fire suppression, fuel models, and ecosystem sustainability. Laboratories on inventory methods, fire history, modeling of fire behavior and risk, and prescribed burning. (SP) Stephens

181A. Wildland Fire Science, (3) Two hours of lecture and three hours of laboratory per week. Prerequisites: Consent of instructor. Formerly 181. Fundamentals of wildland fire including fire behavior modeling, fire history methods, prescribed fire techniques, fire ecology, fire management, wildland fire suppression, fuel models, and ecosystem sustainability. Laboratories on inventory methods, fire history, modeling of fire behavior and risk, and prescribed burning. (SP) Stephens

182. Forest Operations Management, (4) Three hours of lecture and four hours of laboratory per week. Prerequisites: CE 105 or consent of instructor. A capstone workshop with faculty and outside professionals for students planning to enter the field of professional forestry. The workshop develops and examines current issues in forestry and advances critical capacities about real-world dynamics and how professional performance fits with them. Student projects and oral presentations are integral to the course. (F,SP) Staff

Special Topics and Independent Studies

190. Seminar in Environmental Issues, (3) Course may be repeated for credit. Three hours of lecture per week. Prerequisites: Upper division standing and consent of instructor. Interdisciplinary study of issues for advanced students. Designed to develop skills in critical analysis and discussion of specific topics. Course will be available each semester reflecting faculty and student interest. Major research project required. (F,SP) Staff

C191. The American Forest: Its Ecology, History, and Representation, (4) Three hours of lecture and one hour of discussion per week. The American forest will be examined in terms of its ecology, history, and representations in paintings, photographs, and literary essays. This examination seeks to understand the American forest in its scientific and economic parameters, as well as the historic, social, and ideological dimensions which have contributed to the evolution of our present attitudes toward the forest. Also listed as Undergrad Interdisciplinary Studies C136, History of...
139. Environmental Education. (3) Five and one-half hours of lecture per week. Theory and practice of translating ecological knowledge, environmental issues, and values into educational forms for all age levels and all facets of society, including schools. Concentrated experience in participatory education. Also listed as Education C193. Hurst

C193B. Environmental Education. (3) Five and one-half hours of lecture/discussion and six hours of fieldwork per week. Theory and practice of translating ecological knowledge, environmental issues, and values into educational forms for all age levels and all facets of society, including schools. Concentrated experience in participatory education. Also listed as Education C193. Hurst

140. Seminar in Conservation and Resource Management. (3) Two hours of seminar per week. Pre-requisites: Upper division standing in a Environmental Science, Policy, and Management major; 3.2 minimum GPA. Subject must be approved by faculty sponsor during final semester of junior year and course initiated in the first semester of the senior year. (F,SP) Staff

195. Senior Thesis. (3-4) Students who have successfully completed 195 may petition for exemption from 194. Three hours of laboratory/research work per week for one full term. Senior standing in major 3.0 GPA. Must be approved by faculty sponsor during final semester of junior year and course initiated in the first semester of the senior year. (F,SP) Staff

H196. Honors Research. (3) Course may be repeated for a maximum of 8 units. Individual research or meeting with faculty sponsor(s). Twelve hours of work per week. Pre-requisites: Open only to upper division Environmental Science, Policy, and Management majors. Three hours of lecture and 3.2 minimum GPA and unit accumulation. Supervised independent honors research specific to aspects of environmental science, policy, and management, followed by a written report and examination of more than 300 words required for approval. (F,SP) Staff

196A. Internship in ESPM—Field Module. (3-8) Fifteen to 40 hours per week at placement location for 10 weeks. Must be taken on a passed/not passed basis. Pre-requisites: Upper division standing; consent of advisor, faculty sponsor, and Department Chair; restricted to ESPM majors. Intern placement relevant to student’s academic interests and career objectives. Must be approved early in preceding semester. See “Internship Guidelines,” available in ESPM student services office. (F,SP) Staff

196B. Internship in ESPM—Research/Seminar Module. (2-5) Two hours of seminar per week; variable hours of research/analysis for five weeks. Pre-requisites: Upper division standing in an ESPM major; consent of instructor: completed 196A. A five-week period for the student’s analysis of his/her internship experience, preparation of internship report (under the supervision of chair of the intern’s committee). Full participation in a weekly seminar required of all returning interns. (F,SP) Staff

197. Field Study in Environmental Science, Policy, and Management. (1-3) Course may be repeated for credit. Three hours of field study per week per unit. Must be taken on a passed/not passed basis. Pre-requisites: Upper division standing. Campus and departmental restrictions apply. Supervised experience in off-campus organizations relevant to specific aspects of environmental science, policy, and management. Regular individual meetings with faculty sponsor and written reports required. (F,SP) Staff

198. Directed Group Studies for Advanced Undergraduates. (1-3) Course may be repeated for credit. Three hours of work per week per unit. Must be taken on a passed/not passed basis. Pre-requisites: Upper division standing; consent of instructor; campus and departmental restrictions apply. Group study of special topics in environmental science, policy, and management that are not covered in depth in regular courses in the department. (F,SP) Staff

199. Supervised Independent Study and Research. (1-4) Course may be repeated for credit. Three hours of work per week per unit. Must be taken on a passed/not passed basis. Pre-requisites: Upper division standing; campus and departmental restrictions apply. Enrollment restrictions apply; see the Courses and Curricula section of this catalog. Supervised independent study and research specific to aspects of environmental science, policy, and management. (F,SP) Staff

Graduate Courses

201A. Research Approaches in Environmental Science, Policy, and Management. (3) Three hours of lecture per week. Pre-requisites: 201A and 195A and two field trips. This course will review the background mathematical and statistical tools necessary for students interested in pursuing ecological modeling. Topics include linear algebra; difference equation, ordinary differential equation, and partial differential equation models; stochastic processes; parameter estimation; and a number of statistical techniques. This course will be recommended as a pre-requisite for advanced research courses in Integrative Biology, Environmental Studies, and Policy, and Management. Also listed as Integrative Biology C205 and Energy and Resources Group C205. (F,SP) Staff

208. Seminar in Ecological Genetics. (2) Two hours of seminar per week. Current topics and methods related to the genetics of phenotypes and its interdependence with ecological variables. (F) Dodd

210. Spatial Data Analysis for Natural Resources. (3) Three hours of lecture per week. Pre-requisites: C205 or consent of instructor. Computer methods in ecology and geography; spatial analysis, effects of anthropogenic stress on natural systems. Also listed as Integrative Biology C271 and Energy and Resources Group C202. Harte

220. Isotope Biogeochemistry. (3) Three hours of lecture and three hours of laboratory per week. Pre-requisites: Graduate standing. Use of isotopes in present and past terrestrial and aquatic research. Lectures cover the principles of isotope distribution on Earth (first two weeks). The second part of the course focuses on student presentations of case studies and research proposals. In the laboratory, students prepare samples of choice for isotopic analysis. Also listed as Earth and Planetary Sciences C202. (F) Amundson, Dawson, Ingram, Mambelli

222. Surface and Colloid Chemistry of Natural Particles. (3) Three hours of lecture per week. Pre-requisites: 126 or consent of instructor. Structure and coordination chemistry of natural adsorbent particles in aqueous systems; solute adsorption mechanisms and theoretical models; interparticle forces and colloidal phenomena; applications to biogeochemistry and contaminant hydrology. Offered even-numbered years. (SP) Staff

C225. Isotopes. (2) Three hours of seminar for ten weeks. Must be taken on a satisfactory/unsatisfactory basis. This seminar will explore current topics that employ the use of stable isotopes. Discussion topics include the areas of biology, paleontology, biogeochemistry, soil science, and atmospheric science. Students will be required to read at least one discussion relevant literature in the topic area. Also listed as Integrative Biology C226. (F) Amundson, Dawson, Mambelli

228. Advanced Topics in Biometeorology and Micrometeorology. (2) Two hours of lecture per week. Pre-requisites: C129 or consent of instructor. Measurement and modeling of trace gases and energy between the terrestrial biosphere and atmosphere. Micrometeorological flux measurement methods, including eddy covariance, profile, and eddy accumulation methods. A hierarchy of biophysical models are discussed for

views a manuscript in preparation, or a thesis proposal. Not all participants need report, but all are expected to attend and enter into the discussions. Guest lecturers are invited each semester. Also listed as Integrative Biology C204 and Psychology C204. (F,SP)
256. Science, Technology, and the Politics of Na-
ture. (3) Three hours of seminar per week. This course will introduce the methods and theories of Science and Technology Studies (STS) in order to explore the relationships among science, technology, law, and policies in the domains of environment and health. The course will focus some attention on the tension between technocratic legitimacy in science policy making and the role of biotechnology in reshaping the natural and legal order. The course will equip graduate students in the social sciences, law, and public policy with the STS in order to analyze complex problems at the science, technology, and society interface. Offered even-numbered years. (SP) Winickoff

257. Seminar in Forest Economics and Manage-
ment. (1) Course may be repeated for credit. One hour of seminar per week. Prerequisites: Forest Economics and Management (256) or instructor consent. This seminar means students to explore the role of economics in the management of forest and woodland ecosystems. Organization of research presentations, the scientific publication process, and research funding issues will also be addressed. (SP, F) Gilless

258. Seminar in Sustainable Development. (3) Three hours of seminar per week. This course explores critical survey of contemporary environmental science, technology, and history, and the relationships between environmental history, philosophy, ethics, ecology, and policy. Offered odd-numbered years. (F) Merchant

259. Transnational Environmental Politics and 
Technocracy. (3) Three hours of seminar per week. Prerequisites: International Relations, Environmental History, and Environmental Law. Course may be repeated for credit. Three hours of seminar per week. This course explores the relationships among science, technology, law, and policy in the domains of environment and health. The course will focus some attention on the tension between technocratic legitimacy in science policy making and the role of biotechnology in reshaping the natural and legal order. The course will equip graduate students in the social sciences, law, and public policy with the STS in order to analyze complex problems at the science, technology, and society interface. Offered even-numbered years. (SP) Winickoff

260. Governance of Global Production. (3) Three hours of seminar per week. Prerequisites: Global Political Economy, Introduction to International Relations, and Public Administration. Course may be repeated for credit. This course explores critical survey of contemporary environmental science, technology, and history, and the relationships between environmental history, philosophy, ethics, ecology, and policy. Offered odd-numbered years. (F) O’Neill

260. Governance of Global Production. (3) Three hours of seminar per week. Prerequisites: Global Political Economy, Introduction to International Relations, and Public Administration. Course may be repeated for credit. This course explores critical survey of contemporary environmental science, technology, and history, and the relationships between environmental history, philosophy, ethics, ecology, and policy. Offered odd-numbered years. (F) O’Neill

261. Silviculture Seminar. (1) Course may be re-
pet for credit. Two hours of seminar per week. Prerequisites: 185 or consent of instructor. A seminar covering various aspects of silviculture and related issues. (F) O’Hara

261. Silviculture Seminar. (1) Course may be repeated for credit. Two hours of seminar per week. Prerequisites: 185 or consent of instructor. A seminar covering various aspects of silviculture and related issues. (F) O’Hara

Resource Management

265. Seminar on Fire as an Ecological Factor. (2) Course may be repeated for credit. Two hours of lecture/seminar per week. Effect of fire on ecology of forest and rangeland ecosystems is discussed. (F) (SP) Beissinger

266. Seminar in Range Ecology. (2) Course may be repeated for credit. Three hours of seminar per week. Prerequisites: Consent of instructor. A seminar course dealing with selected topics in ecology of rangelands. (F) (SP) Geo

267. Advanced Remote Sensing of Natural Re-
sources. (3) Three hours of lecture/seminar per week. Prerequisites: Remote Sensing of Natural Resources (260) and one semester of statistics. Course may be repeated for credit. Three hours of lecture/seminar per week. This course provides an in-depth examination of multisource spatial data. Laboratories and applications project are to be arranged. Offered odd-numbered years. (SP) O'Hara

268. Seminar in Range Ecosystem Planning and 
Policy. (3) Course may be repeated for credit. Three hours of lecture/seminar per week. Prerequisites: Consent of instructor. A seminar course dealing with selected topics in range ecosystem planning and policy. (F) (SP) Bartolome

268. Seminar in Range Ecosystem Planning and 
Policy. (3) Course may be repeated for credit. Three hours of lecture/seminar per week. Prerequisites: Consent of instructor. A seminar course dealing with selected topics in range ecosystem planning and policy. (F) (SP) Bartolome

269. Seminar in Range Ecosystem Planning and 
Policy. (3) Course may be repeated for credit. Three hours of lecture/seminar per week. Prerequisites: Consent of instructor. A seminar course dealing with selected topics in range ecosystem planning and policy. (F) (SP) Bartolome

270. Advanced Remote Sensing of Natural Re-
sources. (3) Three hours of lecture/seminar per week. Prerequisites: Remote Sensing of Natural Resources (260) and one semester of statistics. Course may be repeated for credit. Three hours of lecture/seminar per week. This course provides an in-depth examination of multisource spatial data. Laboratories and applications project are to be arranged. Offered odd-numbered years. (SP) O'Hara

270. Advanced Remote Sensing of Natural Re-
sources. (3) Three hours of lecture/seminar per week. Prerequisites: Remote Sensing of Natural Resources (260) and one semester of statistics. Course may be repeated for credit. Three hours of lecture/seminar per week. This course provides an in-depth examination of multisource spatial data. Laboratories and applications project are to be arranged. Offered odd-numbered years. (SP) O'Hara

Resource Management

265. Seminar on Fire as an Ecological Factor. (2) Course may be repeated for credit. Two hours of lecture/seminar per week. Effect of fire on ecology of forest and rangeland ecosystems is discussed. (F) (SP) Beissinger

266. Seminar in Range Ecology. (2) Course may be repeated for credit. Three hours of seminar per week. Prerequisites: Consent of instructor. A seminar course dealing with selected topics in ecology of rangelands. (F) (SP) Geo

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aqueous liquids, absorption of vapors and gases by water. Shrinking and swelling in water, aqueous solutions, and nonaqueous liquids. Fluid flow including permeability, thermal, and chemical properties. Study in modes of heat transfer important in wood processing and usage. Offered odd-numbered years. (SP) Beall

288. Special Topics in Wood Science and Technology. Course may be repeated for credit. Prerequisites: Consent of instructor. 

288B. Wood Chemistry. (1-3) Advanced study in wood chemistry primarily for advanced graduate students. (F,SP) Staff

288C. Chemical Processing of Wood. (1-3) Advanced study in chemical wood processing primarily for advanced graduate students. (F,SP) Staff

288D. Wood Mechanics. (1-3) Advanced study in wood mechanics primarily for advanced graduate students. Staff

288E. Wood Physics. (1-3) Advanced study in wood physics primarily for advanced graduate students. (F,SP) Beall

288F. Physical/Mechanical Processing of Wood. (1-3) Advanced study in physical/mechanical processing of wood primarily for advanced graduate students. (F,SP) Beall

288G. Wood Products Pathology. (1-3) Advanced study in wood product pathology primarily for advanced graduate students. (F,SP)

289. Seminar in Wood Science and Technology. (1) Course may be repeated for credit. Two hours of seminar per week. Technical topics in wood science and technology. Technical core. Lecture, discussion, and student reports on fundamental principles of wood science and technology. (F,SP) Beall

Special Topics and Independent Studies

290. Special Topics in Environmental Science, Policy, and Management. (1-4) Course may be repeated for credit. One hour of seminar per week per unit. Prerequisites: Graduate standing or consent of instructor. Study and critical analysis of topics, research, and texts pertinent to environmental science, policy, and management. Different topics will be available each semester reflecting faculty and student interest. (F,SP) Staff

C291. Topics in Fluid Mechanics. (1,2) Course may be repeated for credit. One hour of seminar per week. Must be taken on a satisfactory/unsatisfactory basis. Prerequisites: Consent of instructor. Lectures on special topics which will be announced at the beginning of each semester that the course is offered. Topics may include transport and mixing, geophysical fluid dynamics, bio-fluid dynamics, oceanography, free surface flows, non-Newtonian fluid mechanics, among other possibilities. Also listed as Physics C290I, Mathematics C290C, Chemical Engineering C298M, Nuclear Engineering C290F, Civil and Environmental Engineering C290K, Mechanical Engineering C298A, and Bioengineering C290C. (F,SP) Staff

296. Individual Study. (1-7) Course may be repeated for credit. Hours to be arranged. Must be taken on a satisfactory/unsatisfactory basis. Prerequisites: Consent of instructor. Individual study in consultation with a member of the faculty directed to analysis and synthesis of the literature of a specialized subject area in forestry and resource management. (F,SP) Staff

298. Directed Group Study. (1-6) Course may be repeated for credit. Hours of laboratory/discussion per week per unit. Sections 1-30 to be graded on a satisfactory/unsatisfactory basis. Sections 31-77 to be graded on a letter-grade basis. Prerequisites: Consent of instructor. Advanced study of research topics which vary each semester. (F,SP) Staff

299. Individual Research. (1-12) Course may be repeated for credit. Four hours of laboratory/discussion per week per unit. Must be taken on a satisfactory/unsatisfactory basis. Prerequisites: Consent of instructor. Individual research under the supervision of a faculty member. (F,SP) Staff

601. Individual Study for Master’s Students. (1-8) Course may be repeated for credit. Does not satisfy unit or residence requirements for master's degree. Four hours of laboratory/discussion per week per unit. Must be taken on a satisfactory/unsatisfactory basis. Prerequisites: Consent of instructor. Individual study for the comprehensive examination in consultation with the major field adviser. (F,SP) Staff

602. Individual Study for Doctoral Students. (1-8) Course may be repeated for credit. May not be used for residence requirements for the doctoral degree. Four hours of laboratory/discussion per week per unit. Must be taken on a satisfactory/unsatisfactory basis. Prerequisites: Consent of instructor. Individual study in consultation with the major field adviser, intended to provide an opportunity for qualified students to prepare themselves for the various examinations required for candidates for the Ph.D. (F,SP) Staff

Environmental Sciences

Environmental Sciences (College of Letters and Science and College of Natural Resources)

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Daniel M. Kammen (Energy and Resources Group)
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Environmental Science and Policy, and Management

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College of Natural Resources—Susan Kishi, 260 Mulford Hall, (510) 643-9479, kishi@nature.berkeley.edu.

Choice of College

Students can complete a major in environmental science as either a B.A. or a B.S. degree, or in one of several interdisciplinary environments. For the Bachelor of Arts (B.A.) degree, the College of Natural Resources offers a Bachelor of Science (B.S.) degree. Major and breadth requirements are identified for all students, regardless of college. Please refer to the web site of the appropriate college for details. All students must complete the L&S seven-course breadth requirements and essential skills requirements before graduation.

Major in Environmental Sciences

The environmental sciences major is supervised by an interdisciplinary and intercollegiate faculty committee and is jointly administered by the College of Letters and Science and the College of Natural Resources. The curriculum of the major emphasizes a broad and comprehensive education in the foundations of biology, chemistry, physics, and mathematics, and in social science directly related to environmental problems. Such training is indispensable for those who wish to acquire more than a superficial understanding of the impact of human activities on the environment. Students acquire the necessary skills to rigorously document and predict environmental problems and to make sound recommendations for their avoidance or mitigation.

The environmental sciences major is concerned with interactions between human activities and biological and physical environments on all scales, from local to global. Students elect to emphasize one of three disciplinary fields: biological science, physical science, or social science. The differences between these emphases lie mainly in upper division electives; most required courses, both lower and upper division, are virtually the same for each of the three emphases. Details of course requirements appear below.

The senior research seminar, Environmental Sciences 196A-196B, in which students work intensively on individual research projects under faculty guidance, is a key feature of this major.

Declaring the Major—College of Letters and Science

To be considered for admission to the major in environmental sciences, students need to have at least 30 units of college coursework (excluding AP credit); to have completed Environmental Sciences 10 and at least half of the required lower division courses; and to have at least a 2.0 grade-point average in courses taken for the major.

Declaring the Major—College of Natural Resources

Students in the College of Natural Resources may enter as freshmen or enter the environmental sciences major. Students wishing to transfer from another major and/or college should contact the undergraduate adviser, Susan Kishi, in 260 Mulford Hall, or by e-mail at kishi@nature.berkeley.edu, for details.
Required Courses for All Three Areas of Emphasis (Biological, Physical, Social Science)

Lower Division Major Requirements

Environmental Sciences 10;
Environmental Economics and Policy (EEP) C1 or Economics C3;
Biology 1A-1B (required for biological science) or Biology 1C-1D (required for the following: Environmental Science, Policy, and Management (ESPM) 102A, 113, 114, 115B, 116A, 116B; Integrative Biology 153, 154, 155 (option for physical and social science only);
Chemistry 1A and 3A (for biological and physical science); Chemistry 1A and either 1B or 3A for social science;
Mathematics 1A-1B (required for physical science, recommended for biological and social science); Mathematics 16A-16B may be substituted for biological and social science;
Physics 7A-7B (required for physical science), Physics 8A for biological and social science.

Upper Division Major Requirements

Energy and Resources 102 or ESPM C104/EEP C115;
Earth and Planetary Science C120/Environmental and Renewable Resources Group C120, Public Health 142A, or Statistics 131A (prerequisite to EnvSci 100);
Environmental Sciences 100 (prerequisite to 196A-196B);
Environmental Sciences 196AL and 196BL:
One of the following: Environmental Sciences 125, ESPM 100, ESPM 102D, ESPM 153, ESPM 155, ESPM 160AC/History 120AC, ESPM 163AC/Sociology 128AC, ESPM 165, ESPM 168, EEP C101/Environmental Economics C125, or Geography 130.
In addition, students must take at least one upper division course in the chosen area of emphasis (biological, physical, social science). Please check with your college office for the list of approved courses or go to environmentalsciences.berkeley.edu.

Students are required to have a minimum of 30 upper division units of major coursework. Any remaining units may come from courses on the electives list.

Honors Program

To be eligible for honors, students must meet the minimum GPA established by their college. See Carol Snow (L&S) or Siska Philip (CNR) for further details.

Lower Division Courses

10. Introduction to Environmental Sciences. (3) Three hours of lecture and one hour of discussion per week and one 8-hour field trip per semester. A survey of biological and physical environmental problems, focusing on geologic hazards, water and air quality, weather, dust, solid waste, introduced and endangered species, preservation of wetland ecosystems. Interactions of technical, social, and political approaches to environmental management. (F,SP) Staff

10L. Field Study in Environmental Sciences. (1) Two hours of fieldwork per week. Prerequisites: 10 (must be taken concurrently). Field and laboratory studies of Strawberry Creek throughout its course from the hills to the bay are used to exemplify integration of the physical, biological, and societal impacts of science-based approaches to environmental management. (F) Berry, Kondolf

24. Freshman Seminar. (1) Course may be repeated for credit as topic varies. One hour of seminar per week. Sections 1-2 to be graded on a letter-grade basis. Sections 3-6 to be graded on a pass/not pass basis. The Freshman Seminar Program has been designed to provide new students with the opportunity to explore an intellectual topic with a faculty member in a small-seminar setting. Freshman Seminars are offered in all campus departments, and topics vary from department to department and semester to semester. Enrollment limited to 15 freshmen. (F,SP) Berry

84. Sophomore Seminar. (1,2) Course may be repeated for credit as topic varies. One hour of seminar per week per unit for 15 weeks. One and one-half hours of seminar per week per unit for 10 weeks. Two hours of seminar per week per unit for eight weeks. Three hours of seminar per week per unit for five weeks. Sections 1-2 to be graded on a pass/not pass basis. Sections 3-4 to be graded on a letter-grade basis. Prerequisites: Sophomore year in college.
Sophomore seminars are small interactive courses offered by faculty members in departments all across the campus. Sophomore seminars offer opportunity for close, regular intellectual contact between faculty members and students in the crucial second year. The topics vary from department to department and semester to semester. Enrollment limited to 15 sophomores. (F,SP) Berry.

98. Directed Group Study. (1-4) Course may be repeated for credit as topic varies. Group meetings of various lengths. Must be taken on a pass/not pass basis. Group studies of selected topics which vary from semester to semester. Enrollment restrictions apply; see the introduction to Courses and Curriculum section of this catalog. (F,SP) Staff

100. Introduction to the Methods of Environmental Science. (4) Three hours of lecture, one hour of discussion and one and one-half hours of fieldwork per week. Prerequisites: Environmental science statistics requirements. Open only to declared environmental science majors. Introduction to basic methods used in environmental research by biological, physical, and social scientists. The course is designed to teach skills necessary for majors to conduct independent thesis research in the required senior seminar, 196A-196B/196L. Topics include development of research questions, sampling methods, experimental design, statistical analysis, scientific writing and graphics, and introductions to special techniques for characterizing environmental conditions and features. This course is the prerequisite to 196A, from which the senior thesis topic statement is determined. (SP) Sousa

125. Environments of the San Francisco Bay Area. (3) Three hours of lecture per week. The weather and climate, plants and animals, geology, landforms, and soils of the Bay Area, with an emphasis on the interaction of these physical elements, their modification by humans, and problems deriving from human use. (SP) Berry

196A-196B. Senior Research Seminar in Environmental Sciences. (3,3) Four hours of seminar per week. Prerequisites: Senior standing in the E.S major and 100. Seminar and published research reports giving detailed attention to a specific, current environmental problem in the Bay Area. (F,SP) Staff

196L. Senior Research Laboratory in Environmental Sciences. (1) Course may be repeated for credit as topic varies. One hour of laboratory per week. Prerequisites: Must be taken concurrently in Environmental Science 196A-196B. Independent laboratory or field research in support of the required senior seminar project. (F,SP) Staff

198. Directed Group Study. (1-4) Course may be repeated for credit as topic varies. Must be taken on a pass/not pass basis. Prerequisites: Regulations set by College of Letters and Science. Seminars for the group study of selected topics not covered by regularly scheduled courses. Topics will vary from semester to semester. (F,SP) Staff

199. Supervised Independent Study and Research. (1-4) Course may be repeated for credit. Independent study. Must be taken on a pass/not pass basis. Prerequisites: Enrollment is restricted by regulations listed in the General Catalog. (F,SP) Staff

Epidemiology (School of Public Health, Interdepartmental Graduate Groups)

Department Office: 101 Haviland Hall, (510) 643-9912
shp.berkeley.edu

Chair: Arthur Reingold, M.D.

Professors

Barbara Abrams, Dr. P.H. (Public Health)
John Baline, M.D. University of California, San Francisco
Gladyse Block, Ph.D. (Public Health)
W. Thomas Boyle, M.D. (Public Health)
Patricia Buffler, Ph.D. (Public Health)
Ralph Catalano, Ph.D. (Public Health)
Brenda Eskelazi, Ph.D. (Public Health)
Lisa Fermeli, Ph.D. (Public Health)
William Jagust, M.D. (Public Health)
Nicholas Jewell, Ph.D. (Public Health)
Armen Nuru-Jeter, Ph.D. (Public Health)
Arthur Reingold, M.D. (Public Health)
Lee Riley, M.D. (Public Health)
William Sabatino, Ph.D. (Public Health)
Steve Selvin, Ph.D. (Public Health)
Allen Smith, M.D. Ph.D. (Public Health)
Maryn Smith, Ph.D. (Public Health)
S. Leonard Syme, Ph.D. (Public Health)
Jas Tager, M.D. (Public Health)
Mark van der Laan, Ph.D. (Public Health)
Jane Weintraub, M.D. University of California, San Francisco
Warren Winkelsien, J.M.D. (Epidemiology)

Associate Professors

John (Jack) Colford Jr., M.D. (Public Health)
Sandrine Dudoit, Ph.D. (Public Health)

Assistant Professors

Lisa Barcelos, Ph.D. (Public Health)
Emily Ozer, Ph.D. (Public Health)

Clinical Professors

James Chin, M.D., M.P.H. (Public Health)
Linda Neuhauser, Dr. P.H. (Public Health)

Program Overview

The Ph.D. group in epidemiology is interdisciplinary and includes faculty from a number of departments at Berkeley as well as the University of California, San Francisco (UCSF). Students receive either an M.S. or Ph.D. degree from the Graduate Division of the Berkeley campus. The group is within the academic jurisdiction of the Graduate Council and is administratively located in the Department of Epidemiology.

The group brings together faculty with disciplinary knowledge in epidemiology, biostatistics, demography, sociology, anthropology, behavioral science, molecular biology, genetics, vector biology, and other fields relevant to the study of human health and disease at a population level. M.S. and Ph.D. students receive a strong background in epidemiologic and biostatistical methods and theory and, in addition, must choose a third disciplinary area in which to develop competence. Doctoral dissertation research is generally focused on developing new knowledge about the factors that influence the distribution of health or given disease outcomes within human populations.
The University, its relationship to corpo-
nic Studies Majors. In order to graduate with an
Honors.

Major Requirements

lower Division

The Group Major in Ethnic Studies

The major group in ethnic studies provides a core curriculum designed to develop a comparative and
multidisciplinary understanding of the experiences and communities of African Americans, Asian Ameri-
cans, Chicano, and Native Americans.

Students majoring in ethnic studies study the his-
tory, cultures, and society of Third World communities in the United States within the general context of American society and institutions. Thus, they pursue knowledge vital for a critical under-
standing of contemporary society and for social changes to improve the lives and communities of
racial minorities. Ethnic studies majors also prepare themselves for advanced graduate study in either academic or professional fields.

24. Freshman Seminar. (1) Course may be repeated for credit as topic varies. One hour of seminar per week for fifteen weeks. Must be taken on a passed/not passed basis. Course may be repeated for credit. Enrollment is restricted; see the Introduction to Courses and Curricula section of this catalog. Three hours of fieldwork per week per unit. Must be taken on a passed/not passed basis. Prerequisites: Consent of instructor. Open to freshmen and sophomores only. Supervised community field study. (FSP) Staff

26. Field Study in Communities of Color. (1-3) Course may be repeated for credit. Enrollment is restricted; see the Introduction to Courses and Curricula section of this catalog. Three hours of work per week per unit. Must be taken on a passed/not passed basis. Prerequisites: Consent of instructor. Open to freshmen and sophomores only. Staff

98. Supervised Group Study. (1-3) Course may be repeated for credit. Enrollment is restricted; see the Introduction to Courses and Curricula section of this catalog. Three hours of work per week per unit. Must be taken on a passed/not passed basis. Prerequisites: Consent of instructor. Open to freshmen and sophomores only. Group study of selected topics which will vary from semester to semester. (FSP) Staff

99. Supervised Independent Study and Research. (1-4) Course may be repeated for credit. Enrollment is restricted; see the Introduction to Courses and Curricula section of this catalog. Three hours of work per week per unit. Must be taken on a passed/not passed basis. Prerequisites: Consent of instructor. Individual research on a topic which will lead to the writing of a major paper. Regular meetings with the faculty sponsor. Limited to freshmen and sophomores. (FSP) Staff

Upper Division Courses

100. Comparative Ethnic Literature in America. (4) Three hours of lecture per week. Analysis of how se-
lected works (poetry, short stories, novels, drama, and oral literature) by African American, Chicano, Asian American, and Native American consciousness and experiences. (FSP) Staff

101A. Social Science Methods in Ethnic Studies. (4) Three hours of lecture and one hour of discussion per week. The course provides an overview of social science methods used in ethnic studies fieldwork, archival research, oral histories, literature review, and critical theory. Particular attention is given to re-
search design, forms of data, research presentation and analysis, and the ethical considerations in do-
ning research on communities of color. The course will emphasize presenting research in a clear, concise manner, and students will be expected to do a re-

41AC. A Comparative Survey of Protest Move-
ments Since the 60s. (4) Three hours of lecture and one hour of discussion per week. Formerly 41. An in-
trductory, comparative, and interdisciplinary study of American, Mexican American, Asian Ameri-
can, and Asian American social and political struggles from 1960 to the present. The course traces the de-
velopment of protest movements created by people of color in response to race, class, gender, and political inequality in the context of U.S. politics and history. The course critically examines the internal and exter-
nal factors contributing to the rise and fall of social and political movements and analyzes the politics of the current conjuncture of race, ethnicity, culture, class, and gender, and sexual preference in U.S. politics. This course satisfies the American Cultures requirement. (FSP) Staff

84. Sophomore Seminar. (1,2) Course may be re-
peated for credit as topic varies. One hour of seminar per week per unit for fifteen weeks. One and one half hours of seminar per week per unit for ten weeks. Two hours of seminar per week per unit for eight weeks. Three hours of seminar per week per unit for five weeks. Sections 1-2 to be graded on a passed/not passed basis. Sections 3-4 to be graded on a letter-
grade basis. Prerequisites: At discretion of instructor. Sophomore seminars are small courses offered by faculty members in departments all across the campus. Sophomore seminars offer opportunity for close, regular intellectual contact between faculty members and students in the crucial second year. The topics vary from department to department and semester to semester. Enrollment limited to 15 sophomores. (FSP) Staff
search practicum and present their work in writing on a regular basis. (F) Staff

101B. Humanities Methods in Ethnic Studies. (4) Three hours of lecture and one hour of discussion per week. The course provides an introduction to basic theoretical approaches to the literary and cultural productions of ethnic or "minority" communities in the United States. It also involves the study of important writings by Latino/o, Native American, African American, and mixed race writers, and to a lesser degree, the visual art production of these same communities. The course will focus with particular care on discourses of racialization, gender, and sexuality. (F) Staff

103A. Racialization and Empire. (4) (F,SP)

103B. Ethnicity and the Narrative. (4) Three hours of seminar per week. (F,SP)

103D. Immigration, Racialization, and Globalization. (4) Three hours of seminar per week. (F,SP)

126. Ethnicity, Gender, and Sexuality. (4) Three hours of lecture and one hour of discussion per week. Course focuses on the production of sexualities, sexual identification, and gender differentiation across multiple discourses and locations. (F,SP) Staff

C126. Ethnicity, Gender, and Sexuality. (4) Three hours of lecture and one hour of discussion per week. Course focuses on the production of sexualities, sexual identification, and gender differentiation across multiple discourses and locations. Also listed as Lesbian Gay Bisexual Transgender St C148. (F,SP) Staff

128. Film-Video Images of Communities of Color: Analysis and Video Production. (3) Three hours of lecture per week. Prerequisites: Must be taken in conjunction with a full 24-hour video production seminar: consent of instructor. Formerly 123. Films analyzed for understanding range of alternatives in filmic concepts of history, culture, class, and personal identity. Selected theorists’ points of view among critical studies. Production training for making video projects are conceived/shot/edited within teams. (F) Staff

130AC. The Making of Multicultural America: A Comparative Historical Perspective. (4) Three hours of lecture and one hour of discussion per week. Formerly 130. How and why did American society become racially and ethnically diverse? This comparative study of racial minorities and European immigrant groups examines selected historical developments, events, and themes from the 17th century to the present. This course satisfies the American Cultures requirement. (F,SP) Staff

135AC. Contemporary U.S. Immigration. (4) Three hours of lecture per week. Formerly 135. The myth, reality, and politics of U.S. immigration. This course discusses issues raised by the recent immigration in a comparative, historical approach. An examination of theories, politics, and policy of U.S. immigration restructures our understanding of the American immigration experience. This course satisfies the American Studies requirement. (F,SP) Staff

136. Immigrant Women. (4) Three hours of lecture per week. Prerequisites: Upper division standing and consent of instructor. Examines patterns of women’s immigration to the U.S. in specific socio-historical and cultural contexts. Special attention to race, ethnic, and identity issues from woman-centered analysis and methodology. (F,SP) Staff

141. Racial Politics in America. (4) Three hours of lecture and one hour of discussion per week. Prerequisites: Upper division standing with priority to Ethnic Studies majors. A critical and comparative analysis of contemporary politics and issues affecting Mexican American, Chicano, Native American, and African American communities in the United States. (F,SP) Staff

147. Women of Color in the United States. (4) Three hours of lecture per week. Prerequisites: 20 or the introduction class in any of the Ethnic Studies programs. Exemplifies the contribution of women to Chicana/Latina, African American, Asian American and Native American Women. Conceptual focus will draw on lived experiences and theoretical constructs of race, class and gender. (SP) Staff

150AC. Racialized Mixed Racial Descent, (4) Three hours of lecture and one hour of discussion per week. Formerly 150. Deals with phenomenon of people of mixed-race descent, focusing on United States but with reference to other nations for comparative purposes. Includes historical perspective as well as exploring the psychology, sociology, literature, and cinema pertaining to topic. This course satisfies the American Cultures requirement. (F,SP) Staff

159AC. The Southern Border. (4) Four hours of lecture/discussion per week. The southern border—from Mexico to North America to the Caribbean—will be the subject of this course. An exploration of the United States and Mexico border and how it affects national and foreign policies. This course satisfies the American Cultures requirement. (F,SP) Staff

159AC. The Myth, Re-reading Fanon. (4) Three hours of seminar per week. Prerequisites: Consent of instructor. Designed primarily to give majors in Asian American studies, Chicano studies, Latin American studies, ethnic studies, and Native American studies elementary training in the theoretical approaches to the study of race and ethnicity. Emphasis will be placed on writing and discussion. For a precise schedule of offerings, see department catalog during pre-enrollment week each semester. (F,SP) Staff

162. Cinema and Community: Practice and Theory. (4) Three credits. Group study of selected topics. Deeds with phenomenon of people of mixed-race descent, focusing on United States but with reference to other nations for comparative purposes. Includes historical perspective as well as exploring the psychology, sociology, literature, and cinema pertaining to topic. This course satisfies the American Cultures requirement. (F,SP) Staff

170. Fanon and the Network Society. (4) Three hours of seminar per week. Prerequisites: Consent of instructor. This course combines readings in the humanities and social sciences, along with Frantz Fanon’s texts on decolonization, society, and subjectivity, in order to examine the politics of race and ethnicity in the contemporary world. This seminar brings together a group of students from different methodological perspectives. Issues will vary from semester to semester. (F,SP) Staff

173. Cultures of U.S. Imperialism: Spanish-American War of 1898. (4) Three hours of lecture and one hour of discussion per week. This course satisfies the American Cultures requirement. (F,SP) Staff

Association of Professors

Alfred Arteaga, Ph.D. (Chicano Studies)
Catherine Cho, Ph.D. (Asian American Studies)
VeVe Clark, Ph.D. (African American Studies)
Ramón Grosfoguel, Ph.D. (African American Studies/Ethnic Studies)
Beatriz Manz, Ph.D. (Chicano Studies)
Wade E. Martin Jr., Ph.D. (History)
David Montejano, Ph.D. (Chicano Studies/Ethnic Studies)
Michael Omi, Ph.D. (Asian American Studies)
Michael Persinger, Ph.D. (African American Studies)
Alex M. Saragosa, Ph.D. (African American Studies)
Steven Small, Ph.D. (African American Studies)
Ula Taylor, Ph.D. (African American Studies)
Khathryna Um, Ph.D. (African American Studies)
Barbara A. White, Ph.D. (African American Studies)
L. Ling-chi Wang, M.A. (Asian American Studies)
Assistant Professor

Nelson Malondo-Torres, Ph.D. (Ethnic Studies/Chicano Studies)
**Ethnic Studies Graduate Group**

**Affiliated Faculty:** Please contact the graduate group office for current list.

**Graduate Advisers:** Prof. Sau-ling Wong

The Ethnic Studies Graduate Group doctoral program focuses on the historical and sociocultural study of the core groups racialized in United States history: African Americans, Asian Americans, Chicanos and Latinos, and Native Americans. Transdisciplinary in approach, the program encourages students to adopt a broad range of theories and methods to analyze the construction of these racialized ethnocultural groups in relation to each other, in the EuroAmerican context, and in a transnational context.

The Ethnic Studies Ph.D. Program is a graduate group administered by the Ethnic Studies Graduate Group, which means that its courses are taught, and its students advised, by faculty not only from the Department of Ethnic Studies but also from other departments on campus. The core faculty consists of faculty from the Department of Ethnic Studies (composed of American Studies American, Chicano and Latino Studies, and Native American Studies) and the Department of African American Studies. The core faculty consists of faculty from other departments on campus whose expertise and research interests address the concerns of comparative ethnic studies and who have expressed a special interest in working with graduate students in ethnic studies. Both core and affiliated faculty may teach courses and sit on the examination and dissertation committees of students in the Ethnic Studies Graduate Group doctoral program.

Students may obtain information regarding the requirements and curriculum from the student affairs officer of the Ethnic Studies Graduate Group.

**Graduate Courses**

200. **Critical Terms and Issues in Comparative Ethnic Studies.** (4) Four hours of seminar per week. Formerly 200A. Introduction to the field examining the critical practices and salient terms and issues in the study of contemporary cultural and social formations. The focus is interdisciplinary. (F) Staff

201. **History and Narrativity: Contemporary Theories and Methods.** (4) Four hours of seminar per week. Formerly 200B. The course examines critical theories and methods in the production of historical narratives, social myths, and ideologies dealing with racialization and ethnicity. Special attention is given to employment strategies, tropes, and allegorical forms in the construction of historical events and narratives. (SP) Staff

202. **Cultural Texts: Contemporary Theories and Methods.** (4) Four hours of seminar per week. Formerly 200C. The course examines critical theories and methods in the production of cultural knowledge in the humanities. Special attention is given to transdisciplinary articulation with theories and methods in the social sciences. (F) Staff

203. **Social Structures: Contemporary Theories and Methods.** (4) Three hours of seminar per week. Four hours of seminar per week. The course examines critical theories and methods in the production of knowledge relevant to social, political, economic, and institutional structures. Special attention is given to transdisciplinary articulation with theories and methods in the humanities. (F) Staff

230. **Series in Transdisciplinary Comparative Theories and Methods.** (4) Four hours of seminar per week. Research seminar focus is on critical history and practices across disciplines. (F) Staff

240. **Series in Comparative Transnational Theories and Methods.** (4) Four hours of seminar per week. Research seminar focus is on critical theories and practices in transnational comparative frameworks. (F,SP)

250. **Research Seminar: Selected Issues and Topics.** (4) Course may be repeated for credit. Four hours of seminar per week. Prerequisite: 200 or consent of instructor. A seminar course designed to involve Ethnic Studies students directly in the research process.

Emphasis on examination and analysis of primary sources, methodology, and the development of theoretical constructs. A major research paper is required. (F,SP)

295. **Directed Dissertation Research.** (1-12) Course may be repeated for credit. Individual instruction. Must be taken on a satisfactory/unsatisfactory basis. For qualified students directly working on the doctoral dissertation. (F,SP)

299. **Directed Reading.** (2-4) Course may be repeated for credit. Individual instruction. Must be taken on a satisfactory/unsatisfactory basis. Individual study, in consultation with Group faculty, to prepare students for master's examinations. (F,SP)

601. **Individual Study for Master's Students.** (4) Course may be repeated for credit. Individual instruction. Must be taken on a satisfactory/unsatisfactory basis. Individual study, in consultation with Group faculty, to prepare students for master's examinations. (F,SP)

602. **Individual Study for Doctoral Students.** (2-8) Course may be repeated for credit. Individual conferences. Must be taken on a satisfactory/unsatisfactory basis. Prerequisites: 200A-200B. Individual study, in consultation with Group faculty, to prepare students for the doctoral oral examinations. A student will be permitted to accumulate a maximum of 16 units in 601 and 602, respectively, toward examination preparation. Units earned in these courses may not be used to meet academic residence or unit requirements for the master's or doctoral degree. (F,SP)

**Professional Courses**

301. **Professional Training: Teaching.** (4) Course may be repeated for credit. Two hours of lecture and two hours of seminar per week. Must be taken on a satisfactory/unsatisfactory basis. Prerequisites: Appointments as a Teaching Assistant. To develop teaching skills, especially in undergraduate courses. (F,SP) Staff

C301. **Critical Pedagogy: Instructor Training.** (4) Two hours of seminar and two hours of practicum per week. The seminar provides a systemic approach to theories and practices of critical pedagogy at the university level. Examines the arts of teaching and learning and current disciplinary and cross-disciplinary issues in African/diaspora and Ethnic Studies. Participation two hours per week as practicum in 39, “Introduction to the University: African American Perspectives” is mandatory. The course is required for students expecting to serve as graduate student instructors in the department. Also listed as African American Studies C301. (F,SP) Staff

302. **Professional Orientation.** (2) One and one-half hours of seminar per week. Must be taken on a satisfactory/unsatisfactory basis. This seminar is designed to prepare graduate students in the behavior of professional academics including research, teaching, and academic ethics. (F) Hildgen

303. **Professional Writing.** (2) One and one-half hours of seminar per week. Must be taken on a satisfactory/unsatisfactory basis. This course trains graduates in writing for professional purposes, such as preparing conference papers, final drafts of their writing for publication in journals, applications for funding, preparing exam position papers, dissertation prospectuses, dissertation chapters, book prospectuses, job applications, etc. (F) Staff

**Film**

*(College of Letters and Science)*

**Film Studies Program:** 7408 Dwinelle Hall, (510) 642-1415

**Director:** Mark Sandberg, Ph.D.

**Professors**

Anton Kaes, Ph.D. (German)
Kaja Silverman, Ph.D. (Rhetoric)
Linda Williams, Ph.D. (Rhetoric)
Seymour Chatman (Emenius), Ph.D. (Rhetoric)
Carol Clover (Emenius), Ph.D. (Rhetoric, Scandinavian)

**Associate Professors**

Gaelle Moses, Ph.D. (Italian)
Anne Nesbet, Ph.D. (Slavic Languages and Literatures)
Mark Sandberg, Ph.D. (Scandinavian)

**Assistant Professors**

Greg Niemeyer, Ph.D. (Art Practice)
Jeffrey Skoller, Ph.D.
Kristen Whissel, Ph.D.

**Adjunct Professors**

Mark Berger, B.A.
Russell Merritt, Ph.D.

**Assistant Adjunct Professor**

Alexandra Cohen, Ph.D.

**Lecturers**

Ulysse Dutoit, Licence de Pedagogie (French)
Marilyn Fabe, Ph.D.
Mira Koppell, M.F.A.

**Group Major in Film**

The group major in film is designed to place the history and theory of film in the larger context of humanistic studies.

To declare the film major: Film 25A must be completed. In addition, the student must be progressing in the chosen languages.

**Lower Division**

**History of Film:** Two courses, one on film from its beginnings, covering the silent period and the conversion to sound (to 1930) [Film 25A], and the other on the classical period through the New Wave and the emergence of new ethnic and national cinemas (1930-1971) [Film 25B].

**Documentary Film:** Film 28A.

**Avant-Garde Film:** Film 28B.

Film majors have two options for completing their language requirement:

A. Students may complete the third semester of a college-level language course in a single language (e.g., French 3), or

B. Students may choose to complete the second semester of a college-level language course in two different languages (e.g., German 2 and Swahili 2).

Language courses that are strictly conversational are not acceptable. Students may enroll in the courses being used to satisfy the film language requirement on a Passed/Not Passed basis. Students should be aware that if they are also using the course to satisfy the L&S foreign language requirement, it must be taken on a letter-graded basis. Any natural language is acceptable. Students who are native speakers of a language other than English may demonstrate their language competency by satisfactorily passing a language proficiency exam administered by a language department at Berkeley, or by taking an advanced course in the language (such as an upper division course which is taught in the language). Students are expected to demonstrate both oral and written proficiency.

**Upper Division**

(30 units of upper division credit are required)

**Required Courses:** See the major “Announcement of Classes” for current offerings that satisfy these requirements and for specific topics being taught.
Film Theory: One course on the history of film theory (e.g., Film 100).
Auteur: One course on an individual auteur (e.g., Film 108).
Genre: One course on film genre (e.g., Film 108).

Film Electives: Approximately 18 units required to complete the major requirements of 30 upper division units. Please check with the program office for approved courses.

Honors Program. To be eligible for admission to the Honors Program, a student must have attained senior standing with a grade-point average of 3.3 or higher on all University work and a 3.5 grade-point average or higher in courses in the major. Honors is granted on a competitive basis. Freshman and sophomore honors are as follows: Honors, High Honors, and Highest Honors. Students in the honors program are to take Film H195 for a letter grade to complete a senior honors thesis. Although the production of a film may be part of the preparation of the thesis and the film submitted as a document or example, it is expected that the thesis will be a substantial piece of writing on film criticism or film history.

Graduate Program
Graduate study in film leading to the Ph.D. is carried out under the film track in Rhetoric (see the Rhetoric section of this catalog).

Designated Emphasis in Film Studies
Ph.D. students at Berkeley may add a Designated Emphasis in Film Studies to their major fields. The designated emphasis provides curricular and research resources for students who want to center their film studies in their respective disciplines and have their work formally recognized. Designed to bring together faculty and students from different departments, the program provides a unique context to foster interdisciplinary thinking and promotes innovative research in the theory and history of cinema.

Applicants must be enrolled in a doctoral program at Berkeley and must have completed the film theory seminar (Film Studies 200), offered each fall semester. Students admitted to the designated emphasis program must complete the following requirements: a minimum of three graduate seminars in film studies taken at Berkeley; Film Studies 200, Film Studies 201, Film Studies 240, or a graduate seminar cross-listed with Film Studies 240. Note: Independent study courses may not be used to fulfill this requirement. A member of the Graduate Group must be a committee member of the Ph.D. oral qualifying examination committee. The dissertation must contribute to the study of film.

Lower Division Courses
R1A. The Craft of Writing—Film Focus. (4) Three hours of lecture/discussion per week, plus individual conferences. Formerly Rhetoric R5A. Rhetorical approach to reading and writing argumentative discourse with a focus on film. Close reading of selected texts; written themes developed from class discussion and analysis of rhetorical strategies. Satisfies the first half of the Reading and Composing requirement. (SP) Staff

R1B. The Craft of Writing—Film Focus. (4) Three hours of lecture/discussion per week, plus individual conferences. Formerly Rhetoric R5B. Intensive argumentative writing stimulated through selected readings, films, and class discussion. Satisfies the second half of the Reading and Composing requirement. (SP) Staff

24. Freshman Seminars. (1) Course may be repeated for credit as topic varies. One hour of seminar per week. Sections 1-2 to be graded on a letter-grade basis. Sections 3-4 to be graded on a pass/No Pass basis. The Freshman Seminar Program Seminar has been designed to provide new students with the opportunity to explore an intellectual topic with a faculty member in a small-seminar setting. Freshman seminars are offered in all campus departments, and topics vary from department to department and semester to semester. Enrollment limited to 15 freshmen. (FSP) Staff

25A. The History of Film. (4) Three hours of lecture and three to four hours of laboratory per week. Prerequisites: 25A or equivalent. The sound era through 1971. (F) Staff

25B. The History of Film. (4) Three hours of lecture and three to four hours of laboratory per week. Prerequisites: 25A or equivalent. The sound era through 1971. (F) Staff

26. Moving Image Media. (4) Two hours of lecture and two to four hours of laboratory per week. Prerequisites: 25A. The objective of this class is to prove that film is a basic technical foundation for digital video film production while emphasizing the techniques and languages of creative moving image media from traditional experimental forms to digital video production. The course will consist of lectures/ screenings, discussion/critique, visiting artists, and production workshops in which students will produce a series of exercises and a final project. (FSP) Staff

28A. The Documentary Film. (3) Three hours of lecture and one hour of laboratory per week. Prerequisites: 128 or equivalent. An analysis of the development of the documentary film, including examples by Fiherty, Grierson, Riefenstahl, Wiseman. (FSP) Staff

28B. The Avant-Garde Film. (3) Three hours of lecture and one hour of laboratory per week. Prerequisites: 25A or equivalent. A survey of experimental film, including examples by Vigo, Duchamp, Leger, Bunuel, Clair, Deren, Brakhage, Kubelka, Snow, Gehr, Frampton, and Rainer. (FSP) Staff

39. Freshman/Sophomore Seminar. (1) Course may be repeated for credit as topic varies. One hour of lecture per week per unit. Sections 1-2 to be graded on a letter-grade basis. Sections 3-4 to be graded on a pass/No Pass basis. Freshman and sophomore seminars offer lower division students the opportunity to explore an intellectual topic with a faculty member and a group of peers in a small seminar setting. These seminars are offered in all campus departments; topics vary from department to department, semester to semester. Enrollment limits are set by the faculty, but the suggested limit is 25. (FSP) Staff

50. Introduction to Film for Nonmajors. (3) Three hours of lecture and one to one-and-a-half hours of discussion per week. An introduction to film art and film technique for students who are interested in exploring the history and aesthetics of cinema but do not intend to major in film. The course trace the development of world cinema from the first films of the 1890s to the 1970s, drawing on examples from American, European, Asian, and Third World cinema. (FSP) Staff

70. Introduction to Film Genre. (4) Three hours of lecture and one to three hours of laboratory per week. The study of films as categorized either by industry-identified genres (westerns, horror films, musicals, film noir, etc.) or by the forms and ethics of the documentary changed the production of a film may be part of the preparation of the thesis and the film submitted as a document or example, it is expected that the thesis will be a substantial piece of writing on film criticism or film history. 

85. In the Mix: Anatomy of an Industry. (2) Three hours of lecture and discussion per week. An introduction to the business of filmmaking. The course moves between classic works of the genre and contemporary film, focusing on recent and innovative films. (FSP) Staff

100. History of Film Theory. (4) Three hours of lecture and three to four hours of laboratory per week. Prerequisites: 25A or equivalent. The study of films as categorized either by industry-identified genres (westerns, horror films, musicals, film noir, etc.) or by the forms and ethics of the documentary film (including video). How have the forms and ethics of the documentary changed since the beginning of cinema? A range of practices and strategies will be covered: cinéma vérité, direct cinema, narrational documentary, autobiography, investigative documentary, and recent fictional styles that combine the essayistic with the observational. The course moves between classic works of the genre and contemporary film, focusing on recent and innovative films. (FSP) Staff

128. Documentary. (4) Students will receive no credit for 128 after taking 28A. Three hours of lecture and one to three hours of screening per week. Prerequisites: 128 or equivalent. A survey of the history, theory, and practice of the documentary film (including video). How have the forms and ethics of the documentary changed since the beginning of cinema? A range of practices and strategies will be covered: cinéma vérité, direct cinema, narrational documentary, autobiography, investigative documentary, and recent fictional styles that combine the essayistic with the observational. The course moves between classic works of the genre and contemporary film, focusing on recent and innovative films. (FSP) Staff

140. Special Topics in Film. (4) Course may be repeated for credit as topic varies. Three hours of lecture and one hour of discussion per week. Prerequisites: Declared film major or consent of instructor. Selected topics in the study of film. (FSP) Staff

151. Auteur Theory. (4) Course may be repeated for credit. Three hours of lecture and two to three hours of laboratory per week. Prerequisites: 25A or consent of instructor. The study of films from the perspective of directorial style, genre, or director. (FSP) Staff

160. National Cinema. (4) Course may be repeated for credit as topic varies. Three hours of lecture and two to three hours of laboratory per week. Prerequisites: Declared film major or consent of instructor. The course will focus on the cinema of a particular nation or region. (FSP) Staff

180A. Screenwriting. (4) Three hours of lecture and discussion per week. Prerequisites: Consent of instructor. Formerly 180. The course explores the art and craft of writing a feature-length, narrative screenplay. Participants present three story ideas to...
This hands-on studio course is designed to provide intensive study of the basic elements of film production. Students will learn about film bibliography and the processes of making film. One process that is crucial for making film is to study the way that film and moving image study is done. There will also be a close examination of some of the major themes in narrative, documentary, and two- and four-hour laboratory per week. Prerequisites: Consent of instructor. Field study will include special topics which vary from year to year. Field study shall be part of the preparation of the thesis and the film honors thesis. Although the production of a film may be a part of the preparation of the thesis and the film honors thesis, it is expected that the thesis will be substantial piece of writing of art criticism or film history. (F,SP) Staff

197A. Field Study at the Pacific Film Archive. (2) Three hours of field work and one hour of group meetings per week. Prerequisites: Consent of instructor; 180A recommended. The supervised field program may include experience in the archival research of the PFA's ongoing exhibition program. Prerequisites: Senior standing; 180A recommended. Students will write short papers in collaboration with the PFA's curators. What do curators do? How do they do what they do? What is the role of film archives and curatorial exhibition in the field of film and moving image study? Using the Pacific Film Archive and its programmers as a laboratory, students will go behind-the-scenes of the Archive's curatorial, print, and exhibition programs. Guest speakers will include local press, writers, and artists. Local film and videomakers will trace history of a work from production through exhibition. (F,SP) Staff

197C. Film Curating Internship. (2) Two hours of fieldwork and one hour of discussion per week. Must be taken on a passed/not passed basis. Prerequisites: Declared film major and junior standing or consent of instructor. Experience “behind-the-scenes” at the Pacific Film Archive! Interns will learn about film curation through creating a special project which includes training sessions. Then, for three hours each week, they will help organize materials for inclusion in the clippings files. Interns will gain experience in library organization and film bibliography, as well as a broad knowledge of the kinds of film reviews and criticism found in a variety of sources. (F,SP) Staff

197D. Field Study at Film Quarterly. (2) Two hours of fieldwork and one hour of discussion per week. Must be taken on a passed/not passed basis. Prerequisites: Declared film major with junior or senior standing. Consent of instructor; Interning at Film Quarterly, interns will gain experience in the editorial process. This internship will help the student refine critical skills, develop editorial skills, and experience film on a journal. (F,SP) Staff

198. Directed Group Study. (1-4) Course may be repeated for credit as topic varies. One to four hours of fieldwork per week. Must be taken on a passed/not passed basis. Prerequisites: 25A or equivalent and consent of instructor. Group studies selected topics which vary from year to year. Field shall not coincide with that of any regular course and shall be specific enough to allow students to write an essay based upon their study. Staff

199. Supervised Independent Study for Advanced Undergraduates. (1-4) Hours to be arranged. Must be taken on a passed/not passed basis. Prerequisites: 25A or equivalent and consent of instructor. Field study will include special topics which vary from year to year. Field study shall be part of the preparation of the thesis and the film honors thesis. Although the production of a film may be a part of the preparation of the thesis and the film honors thesis, it is expected that the thesis will be substantial piece of writing of art criticism or film history. (F,SP) Staff

C185. Digital Video: The Architecture of Time. (4) Four hours of studio per week. Prerequisites: 25A and 260A or consent of instructor. This hands-on studio course is designed to present students with a foundation-level introduction to the skills, theories, and concepts used in digital video production. Students will continue to expand their notion of time and space, and the study of people playing. There will also be a close examination of some of the major themes in narrative, documentary, and experimental film production. Prerequisites: Consent of instructor; 180A recommended. Students will work with regular presenters and learn how to program by doing. The course will culminate in a proposal for a comprehensive film series. (F,SP) Staff

200. Graduate Film Theory Seminar. (4) Three hours of seminar and one hour of discussion per week. Prerequisites: Graduate standing or consent of instructor. This seminar will examine both traditional and recent approaches to a systematic study of the history of film. Although we will emphasize contemporary structuralist-semiotic, psychoanalytical, and socio-critical methods, we will also study the classical debates about representation, subjectivity, significance, sexual difference, and the social function of images in modernism and postmodernism. Illustrations will be taken from films from 60 to 1980. Staff

201. Graduate Film Historiography. (4) Three hours of seminar and one to four hours of laboratory per week. Prerequisites: Knowledge of the history of film and approval of a proposal for a comprehensive film series. This seminar will examine both traditional and recent approaches to a systematic study of the history of film. Although we will emphasize contemporary structuralist-semiotic, psychoanalytical, and socio-critical methods, we will also study the classical debates about representation, subjectivity, significance, sexual difference, and the social function of images in modernism and postmodernism. Illustrations will be taken from films from 60 to 1980. Staff

220. Film Curating Part 2. (2) Three hours of laboratory per week. Prerequisites: 220. Students will develop the field experience and its relationship to aesthetic and theoretical questions. Training includes local press, writers, and artists. Local film and videomakers will trace history of a work from production through exhibition. (F,SP) Staff

230. Graduate Production Seminar. (4) Two hours of studio and three to five hours of laboratory per week. Prerequisites: Graduate standing and consent of instructor. Intensive study of the basic elements of film and digital video production and post-production. Graduate students will develop a working knowledge of film and video making through hands-on production experience that will enable them to film and edit their own productions. They will also acquire training to teach basic video production and film production classes. The uses of specific technologies and formats will be discussed in relation to aesthetic and theoretical questions. Training includes pre-production-scripting and storyboarding, production elements including image capture, post-production strategies and aesthetics for nonlinear digital editing programs. The course will also introduce problems of how to format video for exhibition and approaches to distribution, exhibition, and funding. Classes will consist of technical lectures and hands-on workshops, creative exercises, seminar-style discussion and critique, film screenings, assigned readings, and visiting artists and speakers. (F,SP) Staff

240. Graduate Topics in Film. (4) Three hours of lecture/discussion per week. Prerequisites: Graduate standing or consent of instructor. Selected topics in the study of film. Staff

298. Special Study. (1-4) Course may be repeated for credit as topic varies. Individual conferences. Prerequisites: Consent of instructor. Graduate standing.
The Folklore Program

This program is designed to provide graduate students with a competent knowledge of both the materials of folklore and the various methods of studying these materials. The program is an interdisciplinary one in which faculty members from both the humanities and the social sciences participate.

The scope of the courses is international. However, students may specialize in a particular genre, e.g., folktales, or in a particular area such as Russian folklore.

The Major

There is no undergraduate major in folklore.

Preparation for Graduate Study

The best preparation for the graduate program in folklore is a strong undergraduate record in one of the broad fields with which folklore is closely affiliated. Since it is a study of the humanist expression which is handed down from tradition rather than by writing, it is related to all departments that deal with literature, art, music. Since folklore also deals with the entire traditional culture of mankind as manifested in customs and beliefs, it has close affinities with anthropology, design, history, linguistics, philosophy, psychology and sociology. Consequently, a good undergraduate record in any of these disciplines is highly desirable though not necessarily required.

The Graduate Program

The requirements for the M.A. in folklore include 20 units of which at least 10 must be graduate level (200 number) in folklore, and an M.A. thesis based upon field work or some other research project. (No course credits are allowed for the thesis.) Students must take at least one course in two of the following areas: folk narrative, folkloric music, folk or primitive art. As an introduction to the discipline, students must take Anthropology 160, The Forms of Folklore. In addition, all students are required to take the interdisciplinary Folklore 250A-250B, Folklore Theory and Techniques. The student must also demonstrate proficiency in reading at least one foreign language. German is perhaps the most useful language for folklore studies, but French, Spanish, or some language intimately connected with the M.A. thesis may be approved to satisfy the language requirement. Questions on the requirements for the M.A. in folklore should be addressed to the graduate advisor, Folkslore Program, in 205 Kroober Hall.

Graduate Courses

C251. Theories of Narrative. (4) Three hours of seminar per week. Prerequisites: Open to undergraduate who have completed Anthropology 160. This course examines a broad range of theories that elucidate the formal, structural, and contextual properties of narratives in relation to gestures, the body, and emotion; imagination and fantasy; memory and the senses; space and time. It focuses on narratives at work, on the move, in action as they emerge from the matrix of the everyday preeminently, storytelling in conversational—a key to folk genres—the folktale, the legend, the epic, the myth. Also listed as Anthropology C261.

French

(College of Letters and Science)

Department Office: 4125 Dwinelle Hall, (510) 642-2712 french.berkeley.edu

Chair: Michael Lucey, Ph.D.

Professors

Suzanne Guellac, Ph.D., Johns Hopkins University. 19th- and 20th-century literature, contemporary cultural criticism, literature and philosophy.

Timothy Hampton, Ph.D., Princeton University. Renaissance literature.

David F. Hutt, Ph.D., Cornell University. Medieval literature, literary theory and hermeneutics, text editing.

Michael Lurye, Ph.D., New York University. Modern literary and cultural studies; gender, sexuality.

Ann A. Smock, Ph.D., Yale University. 20th-century literature.

Les Bentani (Emeritus), Ph.D., Harvard University. 19th- and 20th-century literature.

*Joseph J. Duggan (Emeritus), Ph.D., Ohio State University. Medieval epic, lyric poetry; romance; textual criticism.

Basil Guy (Emeritus), Ph.D., Yale University. 18th-century literature.

Leonard W. Johnson (Emeritus), Ph.D., Harvard University. 18th-century literature.

Irving Putten (Emeritus), Ph.D., Yale University. 19th-century literature.

Walter E. Rex (Emeritus), Ph.D., Harvard University. 19th-century literature.

Associate Professors

Karl Britto, Ph.D., Yale University. Francophone literature.


Susan Maslan, Ph.D., Johns Hopkins University. 17th- and 18th-century literature.

Nicholas Paige, Ph.D., University of Pennsylvania. 17th-century literature and culture.

Debanati Sanyal, Ph.D., Princeton University. 19th- and 20th-century literature, intellectual history, literature and performance.

Soraya Tatli, Ph.D., Emory University. Francophone literature, French intellectual history.

†Bertrand Augest (Emeritus), Ph.D., University of Colorado. 19th- and 20th-century literature; film history and theory.

Assistant Professor

Déborah Blocker, Doctorat, Université de la Sorbonne Nouvelle—Paris III. 17th- and 18th-century literature; social history of literary practices.

Senior Lecturers


†Séta Chavdarov, Ph.D., University of California, Berkeley. Ulysse Dutot, Licence de Pedagogie et Beaux-Arts, St. Cloud/Paris.

†Esther Adler (Emerita), Ph.D., University of California, Berkeley.

Lecturers

Danielle Boucher, M.A., University of California, Berkeley. Leslie Martin, Ph.D., University of California, Berkeley. Desirée Pries, Ph.D., Indiana University. Bloomberg Rachel Shuh, Ph.D., University of California, Berkeley. Nelly Timmons, Ph.D., University of California, Berkeley.

Graduate Study

The Department of French places primary emphasis on instruction in French at all levels, and the majority of its upper division courses are conducted entirely in that language. Nonmajors and nonmajors, however, may write in English in any upper division course.

Note: Students should consult the current Course Listings (which are revised at the beginning of each semester) via our home page at french.berkeley.edu.

The Major

Courses 1, 2, 3, 4, and 35 or their equivalents; eight upper division courses in French. Twelve upper division units must be taken in residence.

Upper Division Coursework: French 102; two courses chosen from 145-185; two courses chosen from two different centuries (112-120); three electives. At least two of the upper division courses completed in fulfillment of major course requirements must cover material focusing on the 18th century or earlier (historical period requirement).

Honors Program (H19SSA-H19SB): Senior majors in French with a grade-point average of 3.5 over all and in the major may apply to the honors program in French. Students who meet specific criteria may obtain the application to the honors program from the undergraduate assistant. Upon admission to the honors program, students undertake research on an approved topic of their choice in French literature or civilization. The results of this research constitute an honors essay, written under the supervision of a member of the regular faculty. Credit and grade are awarded upon completion of the sequence. The honors sequence is undertaken in addition to the coursework for the major.

Prospective and current majors should consult the department’s brochure, “The Undergraduate Major in French.”

The Minor

Students in the College of Letters and Science may complete one or more minors of their choice, normally in a field both academically and administratively distinct from their major.

The Department of French offers four minor options: a general French minor, French literature, French civilization, and French Language Studies. Each minor requires five upper division courses.

General Minor in French: French 102 and four upper division courses from French 103-189 (see note below).

Minor in French Literature: French 102 and four courses from 103-126 or 140A-140D (see note below).

Minor in French Civilization: French 102 and four courses from 140A-140D or 150-189 (see note below).

Minor in French Language Studies: French 102 and four courses from 130-139 or 145-149, and French 35 (Phonetics).

Note: All minor courses must be taken for a letter grade. Conversation courses cannot be included as electives. One course each from French 102, 103A-103B and 140A-140D may be counted toward the major or minor programs.

Graduate Program

The graduate programs in the Department of French blend strong coverage in the traditional, historically based divisions of French literature and culture with a wide array of ancillary fields and topics—from psychoanalysis, linguistics, and philosophy to the study of gender, law, history, visual arts and film, music, popular culture, francophone studies, and politics.

Both the Ph.D. program in French literature and the Ph.D. program in Romance languages and literatures enable students to undertake original research, to engage in scholarly and critical writing in the field, and to prepare for teaching careers at the college and university level.
The Ph.D. Program in French Literature. The program in French literature is divided into two phases, the M.A. (the first two years of graduate study) and the Ph.D. (thereafter). For the master’s degree, students take a minimum of eight courses including French 270. The remaining courses are chosen in consultation with the graduate adviser to ensure high interest in the department and to prepare students for the master’s exam. (Please note: The department does not admit students who intend to pursue only the master’s degree.)

Upon completion of the M.A. phase, students must (1) take a minimum of six more courses, for a total of 14, (2) meet the foreign language requirement either through examination or through the successful completion of two upper division or graduate courses in a foreign language (other than French) which has not been students’ coursework; (3) pass a written and oral qualifying examination in three areas of study based on the students’ interests and reading lists developed in consultation with faculty; and (4) complete a dissertation.

Ph.D. in Romance Languages and Literatures (Emphasis in French). Students admitted for this degree have a choice of three plans of study.

Plan I includes a detailed knowledge of French literature and philology, a second Romance language as a collateral field, and knowledge of a prescribed list of masterworks in a third Romance language.

Plan II requires a detailed knowledge of French literature and philology, and the command of one broad intellectual movement, or another in two other Romance literatures, to be chosen by the student and the graduate adviser in accordance with the student’s special interest in French.

Plan III requires an in-depth knowledge of the structures and history (internal and external) of French, and two collateral fields in Spanish and Italian. The candidates take such courses as they and the adviser deem necessary in light of the approved plan and pre-requisites. Students usually begin with a thematic topic with a faculty member, followed by courses in a foreign language (other than French) which has not been students’ coursework; and (3) pass a written and oral qualifying examination in three areas of study based on the students’ interests and reading lists developed in consultation with faculty; and (4) complete a dissertation.

Lower Division Courses

1. Elementary French. (5) Five hours of lecture and one hour of laboratory per week. Introduction to speaking, listening, reading, and writing in French. (F,SP)

R1A. English Composition in Connection with the Reading of Literature. (4) Three hours of lecture per week. (Prerequisites: 101 or equivalent.) Course may be repeated for a maximum of 8 units. One course from 112A-112B may be repeated once for credit with a different topic and consent of the undergraduate adviser. Three hours of lecture per week. Prerequisites: 101 or equivalent. May be taken concurrently with 103. An exploration of the ways words and images structure thought, communication, and interactions of the subject and society. Development of reading and writing skills leading to correct and effective expression in French. (F,SP)

103A-103B. Language and Culture. (4,4) Three hours of lecture per week. Prerequisites: 102 or equivalent. Discussion and composition based on the analysis of literary and cultural texts. (F,SP)

112A-112B. Medieval Literature. (4,4) Three hours of lecture per week. Prerequisites: 101 or equivalent. Medieval literature from the Chanson de Roland to the Roman de la Rose. (F,SP)

114A-114B. Late Medieval Literature. (4,4) Three hours of lecture per week. Prerequisites: 102 or equivalent. Late medieval literature: Joinville to Villon. (F,SP)

116A-116B. Sixteenth-Century Literature: Marot to Montaigne. (4,4) Three hours of lecture per week. Prerequisites: 102 or equivalent. Poetry and prose of the French Renaissance and the emergence of the pre-Romantic aesthetic. (F,SP)

117A-117B. Seventeenth-Century Literature. (4,4) Three hours of lecture per week. Prerequisites: 102 or equivalent. Course from 117A-117B may be repeated once for credit, for a maximum of 8 units, with a different topic and consent of the undergraduate adviser. Three hours of lecture per week. Prerequisites: 102 or equivalent.

A. Authors from the first half of the 17th century. The Baroque: its chief exponents, literary attempts to resolve the crisis in Renaissance values, formulation of new concepts in philosophy and psychology, experiments with traditional forms in poetry, fiction, and the theatre. Preciosity, Descartes, and rationalism.

B. The concept of classicism and the development of tragedy. Jansenism, the doctrine of Port-Royal. Social satire and comedy. (F,SP)

118A-118B. Eighteenth-Century Literature. (4,4) Three hours of lecture per week. Prerequisites: 102 or equivalent.

A. Authors from the first half of the 18th century, with emphasis on the origins of the philosophical movement and the development of modern art forms in the theater and the novel.

B. A study of authors of the second half of the 18th century stressing the importance of the “Movement Philosophique” and the development of libertine values as well as the emergence of the pre-Romantic aesthetic. (F,SP)

119A-119B. Nineteenth-Century Literature. (4,4) Course may be repeated once for credit if topic varies. Course may be repeated for a maximum of 8 units. Three hours of lecture per week. Prerequisites: 102 or equivalent.

A. Authors from the first half of the 19th century. Romantic poetry and drama. Balzac, Stendhal, and the novel. Michelet and the emergence of history.

B. Authors from the second half of the 19th century. The various poetic movements: Le Parnasse and Symbolism. Development of the novel, realism, and naturalism. (F,SP)
120A-120B. Twentieth-Century Literature. (4,4) One course from 120A-120B may be repeated for credit, for a maximum of 8 units, with a different topic and consent of the undergraduate adviser. Three hours of lecture per week. Prerequisites: 102 or equivalent.

A. The modern novel, the avant-garde, cubist poetry, Dada and Surrealism, the theatre before the Second World War.
B. Development of the novel, poetry, and theatre since the Second World War. Sartre and existentialism, the theatre of the absurd, nouveau roman. (F,SP)

121A-121B. Literary Themes, Genres, and Structures. (4,4) Course may be repeated once for credit if topics vary. Three hours of lecture per week. Prerequisites: 102 or equivalent. Topics vary from year to year. Past topics have included “littérature fantastique,” science fiction, autobiography, French lyric poetry. (F,SP)

123. Prose Fiction. (4) Three hours of lecture per week. Prerequisites: 102 or equivalent. Studies in the French novel. (F,SP)

124A. Modern Theatre. (4) Three hours of lecture per week. Prerequisites: 102 or equivalent. Studies in 20th-century theatre. (F,SP)

125. Senior Seminar. (4) Course may be repeated once for credit, for a maximum of 8 units, if topic varies. Three hours of lecture per week. Prerequisites: 102 or equivalent. Intensive study of a major author. Three hours of lecture per week. (F,SP)

130. Writing in French. (4) Three hours of lecture per week. Prerequisites: 102 or equivalent. Advanced language, intended to enlarge vocabulary and increase ability with French through examples, illustrations and close study of short literary excerpts. In-depth exploration of French idiosyncrasies in English. Three hours of lecture per week. Prerequisites: 102 or equivalent. Creative writing under the direction of a French major or minor. Three hours of lecture per week. Staff

141. French Studies in an International Context. (4) Four hours of lecture per week. Prerequisites: For French majors and minors only; 102 or consent of instructor. An examination of a theme, issue, or concept from French literary, intellectual or cultural history in its interrelation with non-French texts and contexts. Writing assignments and readings in English for non-majors; writing assignments and French readings in French for French majors and minors. Class discussions in English. Topics vary from year to year. (F,SP) Staff

145. History of the French Language. (4) Three hours of lecture per week. Prerequisites: 102 or equivalent. Formerly 132. Mainly devoted to “external” history of French. From Latin to Old French, its break-up into different languages and dialects, emergence of Parisian French as standard. Influence of other languages on French vocabulary. Study of brief texts from different periods to illustrate evolution of pronunciation and grammar. (F,SP)

146A. Introduction to French Linguistics. (4,4) Three hours of lecture per week. Prerequisites: 102 or equivalent. Formerly 174A-174B. An introduction to the major branches of linguistic analysis (phonology, morphology, syntax, semantics) as applied to the French language. (F,SP)

147. Special Topics in French Linguistics. (4) Course may be repeated for credit as topic varies. Three hours of lecture per week. Prerequisites: 102; 146; or consent of instructor. Formerly 133. Topics vary from year to year. (F,SP)

150A-150B. Women in French Literature. (4,4) Three hours of lecture per week. Prerequisites: 102 or equivalent. A study of the portrayal of women in French literature and of the contributions of women to French literature and thought. (F,SP)

151A-151B. Francophone Literature. (4,4) Course may be repeated once for credit with different topic and consent of the under graduates adviser. Three hours of lecture per week. Prerequisites: 102 or equivalent. A study of Francophone literature: traditional and Francophone literature, structure, relationship between language and message. (F,SP)

161A-161B. A Year in French History. (4,4) One course from 161A-161B may be repeated once for credit with a different topic and with consent of the undergraduate adviser. Three hours of lecture per week. Prerequisites: 102 or equivalent. The study of a year in French history from many points of view—political, social, intellectual, and artistic, as well as literary. (F,SP)

170. French Films. (4) Four hours of lecture and two hours of studio per week. Prerequisites: 102 or equivalent. Beginning French cinema studies: the language of film. (F)

171A-171B. A Concept in French Cultural History. (4,4) Three hours of lecture per week. Prerequisites: 102 or equivalent. An examination of certain large cultural concepts, such as “the Baroque” or “Romanticism,” in French cultural history. Topics vary from year to year. (F,SP)

172A. Psychoanalytic Theory and Literature. (4) Three hours of lecture per week. Prerequisites: 102 or equivalent. An exploration of psychoanalytic theory, psychoanalytical texts. Concepts of fantasy, of the self, and of desire applied to texts by Racine, Balzac, Lautreamont, Rimbaud, and Proust. (F,SP)

173. Linguistics and Literature. (4) Three hours of lecture per week. Prerequisites: 102 or equivalent; 146 or equivalent; or consent of instructor. The impact of linguistics on the theory of literature and the practice of literary criticism in recent years. (F,SP)

174. Music and Literature. (4) Three hours of lecture per week. Prerequisites: 102 or equivalent. A consideration of the ways in which certain writers, as well as some composers, have sought to relate what might be thought of as two manifestations of language, song and poem, or musical score and literary text. (F,SP)

175A. Literature and the Visual Arts. (4) Three hours of lecture per week. Prerequisites: 102 or equivalent. Using various works from the arts and the human sciences, this course will investigate the relations between languages and with different works of art: painting, sculpture, photography, music, and dance. (F,SP)

177A-177B. History and Criticism of Film. (4,4) Four hours of lecture and two hours of studio per week. Prerequisites: 102 or equivalent; 170 or equivalent. The development of French cinema. Discussions, oral and written, will be based on the viewing of films from the work of major French film directors. (F,SP)

178A-178B. Studies in French Film. (4,4) Three hours of lecture and one hour of laboratory per week. Prerequisites: 102 or equivalent; 170 or equivalent. Topics vary from year to year. (F,SP)

180A-180D. French Civilization. (4,4,4,4) Three hours of lecture per week. Prerequisites: 102 or equivalent. Survey of French literature and culture, from the Middle Ages; 180B: The Ancient Regime to 1800; 180C: The 19th Century; 180D: The 20th Century. (F,SP)

183A. Configurations of Crisis. (4) Course may be repeated once for credit with different topic. Course may be repeated a maximum of 8 units. Three hours of lecture per week. Prerequisites: 102 or equivalent. Study of the pressures on artistic, political, and economic structures at moments of crisis in French history. Problems of continuity and discontinuity in aesthetic and social history. (F,SP)

185. Literature and Colonialism. (4) Three hours of lecture per week. Prerequisites: 102 or equivalent. Studies in the literature developed in France at the height of the colonial era. The themes of travel, exotisme, neo-civilisation, the reaction of European countries to the discovery of Africa. (F,SP)

H195A-H195B. Honors Sequence. (2,2) Credit and letter grade awarded on an honors basis. Prerequisites: Open to seniors majoring in French who meet the GPA requirements, with the consent of major adviser. Students will write an essay on a topic relevant to French literature or culture under the supervision of a member of the faculty during two semesters of their senior year. (F,SP)

197. Field Studies. (1-4) Course may be repeated for credit. Two hours of fieldwork per week. Must be taken on a pass/fail/not-passed basis. Prerequisites: Consent of instructor. Supervised field program involving exposure to various experiences in the French language teaching positions. Regular individual meetings with faculty sponsor and written reports required. (F,SP)

199. Supervised Independent Study and Research for Advanced Undergraduates. (2-4) Individual conferences. Must be taken on a pass/fail/not-passed basis. Prerequisites: Restricted to seniors with overall GPA of 3.0 and GPA of 3.0 in French. Enrollment restricted according to College regulations. Individual instruction in areas not covered by courses. (F,SP) Graduate Courses

200. Proseminar. (1) One hour of seminar per week. Advanced course to be taken on a seminar basis. This course is designed to give all graduate students a broad view of the department's faculty, the courses they teach, and their fields of research. In addition, it will introduce students to some practical aspects of the graduate student's life, issues that concern specific fields of research, and questions currently being debated across the profession. (F,SP)
201. History of the French Language. (4) Course may be repeated for credit. Three hours of lecture per week. Formerly 201A-201B. A history of the French language from its Latin origins through the modern period. Emphasis on "external history" (development of the language in relation to other social and cultural phenomena) with some historical grammar (phonology, morphology, syntax, orthography) introduced through textual readings from the various historical periods. Sociolinguistic emphasis, focusing on the emergence of a standard language and its relationship to other varieties of French. (F,SP)

C202. Linguistic History of the Romance Language. (4) Three hours of lecture per week. Prerequisites: Knowledge of at least two of the major Romance languages (French, Italian, and Spanish). Linguistic development of the major Romance languages (French, Italian, and Spanish) from the common Latin origin. Comparative perspective, combining historical grammar and external history. Also listed as Italian Studies C201 and Spanish C202. Staff

204. Oral and Written Discourse in French. (4) Two hours of lecture/discussion per week. Must be taken on a satisfactory/unsatisfactory basis. Study of narrative structures and theories of rhetoric in the French language, for non-native speakers of French. Close analysis of texts and weekly writing assignments. (F,SP)

206. Special Topics in French Linguistics. (4) Course may be repeated for credit as topic varies. Three hours of lecture/discussion per week. Topics may vary from semester to semester. (F,SP)

210A-210B. Studies in Medieval Literature. (4) Course may be repeated for credit as topic varies. Three hours of seminar per week. Offerings vary from year to year. Students should consult the Department's Course Description for current topics.

211A. Reading and Interpretation of Old French Texts. (4) Course may be repeated for credit as topic varies. Three hours of seminar per week. Offerings vary from year to year. Current topics may be found in the Department's Course Description.

220A-220B. Studies in 16th-Century Literature. (4) Course may be repeated for credit as topic varies. Three hours of seminar per week. Offerings vary from year to year. See the Department's Course Description for current topics.

230A-230B. Studies in 17th-Century Literature. (4) Course may be repeated for credit as topic varies. Three hours of seminar per week. Offerings vary from year to year. See the Department's Course Description for current topic. (F,SP) Staff

240A-240B. Studies in 18th-Century Literature. (4) Course may be repeated for credit as topic varies. Three hours of seminar per week. Offerings vary from year to year. See the Department's Course Description for current topic.

245A-245B. Early Modern Studies. (4) Course may be repeated for credit as topic varies. Three hours of seminar per week. Offerings vary from year to year. See the Department's Course Description for current topic. (F,SP) Staff

250A-250B. Studies in 19th-Century Literature. (4) Course may be repeated for credit as topic varies. Three hours of seminar per week. Offerings vary from year to year. See the Department's Course Description for current topic. (F,SP)

251. Francophone Literature. (4) Three hours of seminar per week. Focuses upon the relationship between oral and written cultures in Francophone Africa and/or the Caribbean: Lyric and narrative poetry, drama and novels; the presence of oral tradition in written forms, narrative techniques borrowed from story-telling tradition, the definition of traditional metaphors and imagery, narration of lost worlds; the conflict of traditional culture and modernism; the search for political identity and independence.

260A-260B. Studies in 20th-Century Literature. (4) Course may be repeated for credit as topic varies. Three hours of seminar per week. Offerings vary from year to year. See the Department's Course Description for current topics.

265A-265B. Modern Studies. (4) Course may be repeated for credit as topic varies. Three hours of seminar per week. Offerings vary from year to year. See the department's course description for current topic. (F,SP) Staff

270A-270B. Literary Criticism: Recent Work in French. (4) Three hours of seminar per week. A close investigation of a number of important critical works in the field of French, including an examination of the various other texts (literary and critical) with which they engage. Orient students to the varied field of French studies and develops the critical and research skills necessary for advanced work in the field.

275A, Problems of Literary Theory. (4) Course may be repeated for credit as topic varies. Three hours of seminar per week. Offerings vary from year to year. See the Department's Course Description for current topics.

298. Special Study. (1-4) Course may be repeated for credit. Individual conferences. Must be taken on a satisfactory/unsatisfactory basis. Designed for students engaged in exploration of a restricted field, involving the writing of a report. May not be substituted for available graduate courses. (F,SP)

299. Individual Research. (4-12) Course may be repeated for credit. Individual conferences. Must be taken on a satisfactory/unsatisfactory basis. Required for all Graduate Students who need more than the comprehensive exam in consultation with the field adviser. (F,SP)

601. Special Study for Graduate Students. (1-12) May not be used to satisfy units or residence requirements. Individual conferences. Must be taken on a satisfactory/unsatisfactory basis. Individual study for the comprehensive exam in consultation with the field adviser. (F,SP)

302. Teaching French in College: First Year. (3) Three hours of lecture and attendance at demonstration class for five hours per week. Must be taken on a satisfactory/unsatisfactory basis. Prerequisites: For graduate students teaching at college level. Required for all new T.A.s. Bi-weekly lectures on methodology, grading and testing, demonstration class with required attendance five times per week; language laboratory observations; supervised classroom practice. Additional seminars and discussion sections on methodology. Required for all Graduate Student Instructors teaching French 1 for the first time. (F,SP)

303. Teaching French in College: Second Year. (3) Three hours of lecture and attendance at demonstration class for five hours per week. Must be taken on a satisfactory/unsatisfactory basis. Bi-weekly lectures on methodology, grading and testing in French 2. Demonstration class with required attendance five times per week; language laboratory observations; supervised classroom practice. Additional seminars and discussion sections on methodology. Required for all Graduate Student Instructors teaching French 2 for the first time. (F,SP)

335. Teaching French in College: Practical Phonetics and Listening Comprehension—Instruction on Creating a Web-Assisted Course. (3) Three hours of lecture per week. Must be taken on a satisfactory/unsatisfactory basis. Prerequisites: Graduate standing. Required of all Graduate Students teaching French 35 for the first time. Attendance at demonstration class two hours per week. Readings. Journal of observations. Practical training in creating multimedia documents, Web pages, and exercises. Final paper and/or final project. (F,SP)

Gender and Women’s Studies
(College of Letters and Science)

Department Office: 3326 Dwainville Hall #1070, (510) 642-2761
departments.berkeley.edu
Chair: Barrie Thorne, Ph.D., (510) 643-2513

Professors
Evelyn Nakano Glenn, Ph.D. Harvard University. Women of color in the U.S.; women, work, and technology; comparative studies of race and gender (Ethnic Studies, Asian American Studies)
Trinh T. Minh-ha, Ph.D. University of Illinois. Feminist theory; film theory and production; comparative literary and art theory; cultural politics; third world art and politics (Rhetoric)
Minoo Moa’d, Ph.D. University of Montreal. Postcolonial and transnational feminist theories; immigration and diaspora studies; feminist theories of Eastern Middle Eastern studies; Iranian cultural politics and diasporas
Barrie Thompson, Ph.D. Brandeis University. Feminist theory; sociology of gender, families, and childhood; comparative studies of gender and age relations; ethnographic methods (Sociology)

Associate Professors
Paola Bacchetta, Ph.D. Sorbonne. Transnational feminist theories and practices; gender, sexuality, popular culture; postcolonial theory; social movements (feminist, lesbian, queer, right-wing) (ethnology/political conflict, space, gender politics)
Charis Thompson, Ph.D. University of California, San Diego. Feminist theory; science and technology; reproductive and genetic technologies; transnational comparative studies of reproduction; gender and environment (U.S., Asia, Europe, Africa, Africa, South America) (Sociology)

Assistant Professor
Meiling Shen, Ph.D. University of California, Berkeley. Queer and feminist theory; critical linguistics with focus on cultural politics of gender, sexuality, race, immigration; paradigms of interdisciplinarity

Affiliated Faculty
Elizabeth Abel, Ph.D. (English)
Kathleen Abushanab, J.D. (Law)
Alice M. Agogino, Ph.D. (Mechanical Engineering, Executive Vice Chancellor & Provost)
Emilie Bergmann, Ph.D. (Spanish and Portuguese)
Daniel Boyarin, Ph.D. (Near Eastern Studies, Rhetoric)
Kari A. Byrd, Ph.D. (Women's Studies, Comparative Literature)
Wendy Brown, Ph.D. (Political Science)
Judith Butler, Ph.D. (Rhetoric)
Kiren A. Chaudhry, Ph.D. (Women's Studies, Comparative Literature)
Pheng Cheah, Ph.D. (Rhetoric)
Charis Thompson, Ph.D. (Rhetoric)
Viviana Guevara, Ph.D. (Sociology, Comparative Literature)
Lawrence M. Cohen, Ph.D. (Anthropology)
Margaret Conkey, Ph.D. (Anthropology)
Vasudha Dalmia, Ph.D. (South and Southeast Asian Studies)
Whitney Davis, Ph.D. (History of Art)
Louise A. Fortmann, Ph.D. (Environmental Science, Policy, and Management—Society & Environment)
Denzel Goldberg, Ph.D. (German, Film Studies)
Mark Gitlin, Ph.D. (Sociology)
Darcy Grimaldo Grady, Ph.D. (History of Art)
Angela P. Harris, J.D. (Law)
James Hart, Ph.D. (Geography)
Cori Hayden, Ph.D. (Anthropology)
Carla Hesse, Ph.D. (History, Comparative Literature)
Percy Hintzen, Ph.D. (African American Studies)
Shannon Jackson, Ph.D. (Theater, Dance, and Performance Studies, Rhetoric)
Jennifer Johnson-Hanks, Ph.D. (Demography)
Rosemary Joyce, Ph.D. (Anthropology)
Elaine H. Kim, Ph.D. (Asian American Studies, Ethnic Studies)
Leslie V. Kurke, Ph.D. (Classics, Comparative Literature)
Thomas Aquinas, Ph.D. (History, Comparative Literature)
Marcia Linn, Ph.D. (Education)
Michael Lucey, Ph.D. (French, Comparative Literature)
Kristin Luker, Ph.D. (Law, Sociology, Middle Eastern Studies)
Saba Mahmood, Ph.D. (Anthropology)
Frances R. Massell, Ph.D. (Spanish and Portuguese, Comparative Literature)
Charis Thompson, Ph.D. (Rhetoric)
Christine Maslach, Ph.D. (Psychology)
Mary Ann Mason, Ph.D. (Social Welfare)
Carolyn Merchant, Ph.D. (Environmental Science, Policy, and Management—Society & Environment)
Dawne Moon, Ph.D. (Sociology)
The minor is organized around the question of how, and from where, gender and its intersections with other relations of power, such as sexuality, race, class, national- ity, religion, and age. Questions are addressed within the context of a transnational world from perspectives as diverse as history, sociology, literary and cultural studies, postcolonial theory, science, new technology, and art.

The undergraduate program is designed to introduce students to women's studies, focusing on gender as a category of analysis and on the work- ings of power in social and historical life. The department offers an introduction to feminist theory as well as more advanced courses that seek to ex- pand the boundaries for critical reflection and analysis and to engage students with varied approaches to feminist research. The curriculum draws students into interdisciplinary analysis of specific gender practices in areas such as feminism in a transna- tional world, the politics of representation, feminist science studies, women and work, women and film, gender and health, and the politics of childhood.

The department offers an undergraduate major and minor. It also houses an undergraduate minor in lesbian, gay, bisexual, and transgender studies, a program whose courses overlap productively with feminist studies. Faculty in the department col- laborate with an extensive group of extended facul- ty in the DEWGS: Emphasis in Women, Gender and Sexuality, which provides graduate students across campus with a site for transdiscipli- nary learning and teaching. The department is now developing a Ph.D.-granting Graduate Group in Transnational Feminist Studies, which will involve faculty from a range of depart- ments. The department fosters connections with scholars in feminist and sexuality studies through- out the campus by cross-listing courses, collabo- rating in research, and participating in the Gender Consortium, which links research and teaching units that focus on gender.

Major Programs

Prerequisites: To declare the gender and women’s studies major, students must have completed GWS 10 and GWS 20 and have a minimum GPA of 2.0.

Upper Division Requirements: The requirements for a gender and women’s studies major consist of a minimum of eight upper division courses in gen- der and women’s issues (30-32 units) distributed as follows:

Core courses (20 units): 101, Doing Feminist Re- search; 102, Transnational Feminisms; 103, Identities Across Difference; 104, Feminist Theory; 195, Senior Seminar.

Electives (10-12 units): Three electives, at least one in the Department of Gender and Women’s Studies; the other two may be fulfilled by classes offered by other departments that are listed in “Courses on Gender and Women,” published each semester by the Department of Gender and Women’s Studies.

Honors Program: Students must have a 3.3 for honors, a 3.7 for highest honors. In all cases, the senior thesis must be deemed excellent.

Minor Programs

Gender and Women’s Studies: Students can complete one or more minors of their choice, normally in a field both academically and administratively distinct from their major. To be admitted to the minor in gender and women’s studies, students must complete GWS 10. Minors in gender and women’s studies must complete five upper division courses as follows: any three of the core courses (GWS 101, 102, 103, 104); plus two electives in gender and women’s studies. A minimum GPA of 2.0 is required for the minor program.

Lesbian, Gay, Bisexual, and Transgender (LGBT) Studies Minor: This Minor is organized around four core courses; an introductory overview of LGBT culture and history in the U.S.; a visual and literary studies course; a cross-cultural studies course; and a history of sexuality course. In addi- tion to these core courses, students are required to take two electives, which are approved each year by the director and posted online. Teaching is largely done by about 12 ladder-rank faculty.

Prerequisites for Nonmajors and Minors

Students who are not majoring or minoring in gen- der and women’s studies but wish to take gender and women’s studies core courses (101, 102, 103, and 104) must take GWS 10, GWS 20, or their equivalent beforehand.

Graduate Program—Designated Emphasis in Women, Gender, and Sexuality

Ph.D. students at Berkeley may add a Designated Emphasis in Women, Gender, and Sexuality (DEWGS) to their major fields. Designed to en- hance interdisciplinary graduate studies at Berke- ley, the DEWGS provides curricular and research resources for students who are already admitted to graduate degree programs on campus.

The designated emphasis program was developed to accommodate some of the many students who conduct graduate-level research in related topics across numerous fields. Administered by the Depart- ment of Gender and Women’s Studies and the Graduate Group in Women, Gender, and Sexual- ity, the designated emphasis program provides its students with certification as well as with a context for the interdisciplinary exchange of ideas and de- velopment of research.

Applicants will be selected according to their aca- demic qualifications, the appropriateness of their in- terests to the program’s teaching resources, and the enrollment capacity of its graduate seminars. To be admitted to the program, applicants must al- ready be accepted into an existing Ph.D. program at Berkeley (master’s students and students at other institutions) or enter the graduate stud- ents should apply in their third semester for ad- mission to the program in their fourth semester. Students must apply before completing their qual- ifying examinations.

Students admitted to the designated emphasis pro- gram will be enrolled in the required introductory seminar (GWS 200) offered each spring. Students must fulfill the following requirements before com- pletion of the degree: The introductory seminar (GWS 200), an elective seminar (GWS 210), and a dissertation research seminar (GWS 220). A dissertation committee, which will involve faculty from Women, Gen- der, and Sexuality must be on the qualifying ex- amination committee; a topic on women, gender, and sexuality must be on the qualifying examination, and a member of the dissertation committee must be on the dissertation committee.

For more detailed information concerning this pro- gram, students should consult the department.

Further Information

For further information, see the online Schedule of Classes and the department’s course descriptions issued before the start of each semester. The de- partmental publication, “Courses on Gender and Women,” provides detailed, up-to-date information about courses offered by the Department of Gen- der and Women’s Studies.

For further information about the department, events, and links to other sites of interest, go to womenstudies.berkeley.edu.

Gender and Women’s Studies

Lower Division Courses

R1B. Reading and Composition. (4) Three hours of lecture and one hour of discussion per week for 8 weeks. Formerly Women’s Studies R1B. Training and instruction in ex- pository writing in conjunction with reading literature. The readings and assignments will focus on themes and issues in gender and women’s studies. This course satisfies the second half of the Reading and Composition requirement. (SP) Staff

10. Introduction to Gender and Women’s Studies. (4) Course may be repeated for credit. Four hours of lecture/discussion per week. Formerly Women’s Stud- ies 10. Introduction to theoretical and practical concepts in gen- der and women’s studies. Critical study of the forma- tion of gender and its intersections with other relations of power, such as sexuality, racialization, class, reli- gion, and age. Questions can be asked within the context of a transnational world. Emphasis of the course will change depending on the instructor. (F,SP) Staff

14. Gender, Sexuality, and Race in Global Political Issues. (4) Course may be repeated for credit. Three hours of lecture per week. Formerly Women’s Studies 14. The production of gender, sexuality, and processes of racialization in contemporary global political issues. Topics and geographical foci may vary. Examples: the post-9-11 situation in the U.S.; war in Afghanistan and Iraq; Hindu-Muslim conflict in India; the wars in the former Yugoslavia and Rwanda; the Is- rael/Palestine situation; global right-wing movements; and state and social movement transformations and transna- tional “security” measures. (F,SP) Staff

C15. Geographies of Race and Gender. (4) Three hours of lecture and one hour of mandatory discussion per week. Formerly Women’s Studies C15. What can geography contribute to our understanding of gender, sexuality, and racialized and gendered experiences in a globalizing world? The course examines (a) how supposedly “nat- ural” differences are actually produced through ev- eryday practices in particular spatial contexts; (b) his- torical and cultural geographies of race and gender in the U.S. in relation to those in other parts of the world, including South Africa; and (c) how these concepts and comparative historical geographies can help us think critically and constructively about questions of social change in the face of globalization. Also listed as African American Studies C15 and Geography C15.

20. Introduction to Feminist Theory. (4) Four hours of lecture/discussion per week. Formerly Women’s Studies 20. Why study feminist theory? What does the desire to theorize gender emerge? What does theory do? What forms does theory take? What is the relationship between theory and social move-
menents? This course will introduce students to one of the most exciting and dynamic areas of contemporary inquiry. (F,SP) Staff

R20W. Writing Intensive Workshop—Feminist Theory. (8) Three hours of seminar and two hours of discussion per week. Prerequisites: English 1A and 20. Formerly Women’s Studies R20W. This course is open only to students who have not completed the second half of the reading and composition requirement. This two-credit course, offered with two two-hour one-on-one sections per week per credit, is designed to teach students the craft of writing and to provide them the opportunity to explore their ideas about self, gender, and culture with other students. Two hours of tutorial per week. Must be taken in sequence. (F,SP) Staff

C23AC. Foundations of American Cyber-Culture. (6) Six hours of lecture per week. Formerly Women’s Studies C23AC. This course will enable students to think critically about, and engage in practical experiments in, the complex interactions between new media and perceptions and performances of embodiment, agency, citizenship, collective action, individual identity, time, and spatiality. We will pay particular attention to the categories of personhood that make up the UC Berkeley American Cultures rubric (race and ethnicity), as well as to gender, nation, and disability. The argument threading through the course will be the ways in which new media both reinforce preexisting social hierarchies and yet offer possibilities for the transcendence of those very categories. The new media and we will leave the precise definition of the new media as something to be argued about over the course of the semester—can be yet another means for reifying and transforming the same can be the conduit for violence and transnational domination. This course satisfies the American Cultures requirement. (F,SP) Staff

39. Freshman Sophomore Seminar. Course may be repeated for credit as topic varies. One hour of seminar per week. Sections 1-2 may be graded on a letter-grade basis. Sections 3-4 to be graded on a passed/not passed basis. Formerly Women’s Studies 39. Freshman and sophomore seminars offer lower division students the opportunity to explore an intellectual topic with a faculty member and a group of peers in a small-class setting. These seminars are offered in all campus departments; topics vary from department to department and from semester to semester. Enrollment limits are set by the faculty, but the suggested limit is 25. (F,SP) Staff

40. Special Topics. (3) Course may be repeated for credit. Three hours of lecture per week. Formerly Women’s Studies 40. The findings of feminist scholars as to the core of gender as a particular problem, field, or existing discipline. Designed primarily for lower division students and nonmajors. Topics vary from semester to semester. Students should consult the Women’s Studies “Announcement of Courses” for specific semester topics. (F,SP) Staff

50. Gender and Popular Culture. (3) Course may be repeated for credit. Three hours of lecture per week. Formerly Women’s Studies 50. A multi-disciplinary course designed to provide students with an opportunity to work with faculty investigating the topic gender and popular culture. (F,SP) Staff

50AC. Gender in American Culture. (3) Course may be repeated for credit. Three hours of lecture per week. Formerly Women’s Studies 50AC. A multi-disciplinary course designed to provide students with an opportunity to work with faculty investigating the topic gender in American culture. This course satisfies the American Cultures requirement. (F,SP) Staff

84. Sophomore Seminar. (1,2) Course may be repeated for credit as topic varies. One hour of seminar per week per unit for 12 weeks. One and one-half hours of seminar per week for 10 hours per week for 10 weeks. Three hours of seminar per week per unit for five weeks. Three hours of seminar per week per unit for eight weeks. Three hours of seminar per week per unit for five weeks. Two sections 1-2 to be graded on a passed/not passed basis. Three sections 3-4 to be graded on a letter-grade basis. Prerequisites: At discretion of instructor. Formerly Women’s Studies 84. Sophomore seminars are small interactive courses offered by faculty members in departments all across the campus. Sophomore seminars offer opportunity for close, regular intellectual contact between faculty members and students. Admission is by permission from the particular department to department and semester to semester. Enrollment limited to 15 sophomores. (F,SP) Staff

98. Directed Group Study for Undergraduates. (1-4) Course may be repeated for credit. Enrollment is restricted; see the Introduction to Courses and Curricula for specific semester restrictions. Formerly Women’s Studies 98. Seminars for the group study of selected topics not covered by regularly scheduled courses. Topics will vary from year to year. (F,SP) Staff

99. Supervised Independent Study and Research. (1-4) Course may be repeated for credit. Three to twelve hours of tutorial or fieldwork per week. Must be taken on a passed/not passed basis. Prerequisites: Freshmen or sophomores only. Formerly Women’s Studies 99. Individual research by lower division students only. (F,SP) Staff

Upper Division Courses

100AC. Women in American Culture. (3) Three hours of lecture per week. Formerly Women’s Studies 100AC. This course is designed to provide students with an opportunity to work with faculty investigating the topic women in American culture. This course satisfies the American Cultures requirement. (F,SP) Staff

101. Doing Feminist Research. (4) Three hours of lecture/discussion per week. Prerequisites: 10 and 20. Formerly Women’s Studies 101. In this course, students will learn to apply various research techniques from the arts, humanities, social sciences, and sciences. The teaching of interdisciplinary research skills will focus on practices of gender in a particular domain such as labor, love, science, aesthetics, film, religion, politics, or kinship. Topics will vary depending on the instructor. (F,SP) Staff

102. Transnational Feminisms. (3) Three hours of lecture/discussion per week. Formerly Women’s Studies 102. An overview of transnational feminist theories and practices, which address the workings of power that shape our world, and women’s practices of resistance within and beyond the U.S. The course engages with genealogies of transnational feminist theories, including analyses of women, gender, sexuality, “race,” racism, ethnicity, class, nation, postcoloniality; international relations; post-“development”; globalization; area studies; and cultural studies. (SP) Staff

103. Identities Across Difference. (4) Four hours of lecture/discussion per week. Prerequisites: 10. Formerly Women’s Studies 103. Formerly Women’s Studies 1102. The course engages as a product of articulation and investigation of self and other, rather than an inherited marking. Emphasis, for example, may be placed on the complexities of the American experience within the three experiences of the United States and in diverse parts of the world. (F) Staff

104. Feminist Theory. (3) Four hours of lecture/discussion per week. Prerequisites: 10 and 20. Formerly Women’s Studies 104. Feminist theory examines the basic categories that structure social life and that condition dominant modes of thought. Feminist theory engages with many currents of thought such as liberalism, Marxism, psychoanalysis, postcolonial theory, and transnational feminist theory. In this course, students will gain a working knowledge of the range and uses of feminist theory. (F,SP) Staff

111. Special Topics. (1-4) Course may be repeated for credit as topic varies. One to three hours of lecture/discussion per week. Formerly Women’s Studies 111. This course is designed to provide students with access to a particular faculty member to work with the Women and Men’s Studies faculty, investigating a topic of mutual interest in great depth. Emphasis in on student discussion and collaboration. Topics will vary from semester to semester. Number of units will vary depending on specific course, format, and requirements. (F,SP) Staff

120. The History of American Women. (3) Three hours of lecture per week. Formerly Women’s Studies 120. This course will survey the history of women in the United States from approximately 1890 to the present, a century of dramatic and fundamental change in the meaning of gender differences. This course covers such topics as work, the family, sexuality, and politics and be attentive to variations in the structure and experience of gender based on race, ethnicity, and class.

125. Women and Film. (3) Three hours of lecture and two hours of screening per week. Prerequisites: 10 and 20. Formerly Women’s Studies 125. This course explores the role of women both in front of and behind the camera. It examines the socially constructed nature of gender representations in film and analyzes the position of women as related to social and cultural perception of films. Emphasis is on feminist approaches that challenge and explore the underlying working of patriarchy in cinema. (F,SP) Staff

126. Film, Feminism, and the Avant-Garde. (4) Three hours of lecture per week. Formerly Women’s Studies 126. Focusing on the creative process while engaging in critical debates on politics, ethics, and aesthetics, the course explores the site where feminist film-making practice meets with and challenges the avant-garde tradition. It emphasizes works that question conventional notions of subjectivity, audience, and interpretation in relation to film making, film viewing, and the cinematic apparatus. (F,SP) Staff

129. Bodies and Boundaries. (3) Three hours of lecture/discussion per week. Formerly Women’s Studies 129. This course engages a trans-disciplinary transnational perspective. The human body as both a source of pleasure and as a site of coercion, which expresses individuality and reflects social worlds. Looks at bodies as gendered, raced, able-bodied, fat, thin, commodity or inalienable. Considers masculinity, women’s bodies, sexuality, sports, clothing, bodies constrained, in leisure, at work, in nation-building, at war, and as feminist theory. (F,SP) Staff

130. Gender and Health. (3) Three hours of lecture/discussion per week. Formerly Women’s Studies 130. This course explores the role of gender in health care status, definitions and experiences of health, and in practices of medicine. Feminist perspectives on health care disparities, the medicalization of society, and transnational processes relating to health. Gender will be considered in dynamic interaction with race, ethnicity, sexuality, immigration status, religion, nation, age, and disability, and in both urban and rural settings. (F,SP) Staff

131. Gender and Science. (3) Three hours of lecture/discussion per week. Formerly Women’s Studies 131. The role of science as a social institution played in the sexual division of intellectual and emotional labor underlying our cultural history? What consequences has this division had for scientific practice? In what ways has the historical exclusion of traditionally female interests affected the development of the natural sciences? What differences if any would the full and equal participation of women make? Staff

134. Gender and the Politics of Childhood. (4) Three hours of lecture per week. Formerly Women’s Studies 134. Explores gender and age as interrelated dimensions of social structure, meaning, identity, and embodiment. Emphasis on the gendered politics of childhoods for example, in sexual reproduction; child-rearing, motherhood, fatherhood, care, and rights; the changing global political economy of childhoods and varied constructions of “the child”; inclusion/exclusion and opportunities and limitations for and by children: growing up in schools, neighborhoods, and families. (F,SP) Staff

139. Women and Work. (4) Three hours of lecture/discussion per week. Formerly Women’s Studies 139. This course uses gender as a lens to examine the economy, and organized labor. Students learn varied conceptual approaches with which to probe such issues as gender divisions of labor, the economic significance of caring and other forms of unpaid labor, earnings disparities between men and women, race and gender in women’s work, transnational labor immigration, and worker resistance and organizing. (F,SP) Staff
An introduction to women and gender in Reading and critical works. Drawing upon contemporary theories of representational politics, the specific focus of the course will vary, but the emphasis will remain on the intersections of gender, race, nation, sexuality, and class in particular cultural and critical practices. (F,SP) Staff

141. Interrogating Global Economic “Development.” (4) Three hours of lecture/discussion per week. Pre-requisites: Consent of instructor. Formerly Women’s Studies 141. An introduction to women and gender in “development.” This course will engage students with some of the key themes in contemporary feminist economic and development theory. It will explore the agency of immigrant women as they cope with change and claim their rights as citizens. (F,SP) Staff

144. Alternate Sexualities in a Transnational World. (4) Course may be repeated for credit. Three hours of lecture/discussion per week. Prerequisites: Consent of instructor. Formerly Women’s Studies 144. This course engages with contemporary narratives produced by and about lesbian, gay, bisexual, and transgender persons. It explores a range of theories of “overdevelopment,” national and international “development” apparatuses, “development” practices, and alternatives. (F,SP) Staff

155. Gender and Transnational Migration. (4) Three hours of lecture/discussion per week. Prerequisites: Consent of instructor. Formerly Women’s Studies 155. This course examines gender structures and relations as they are reconfigured and reassessed in the context of contemporary migration. It will analyzes the agency of immigrant women as they cope with change and claim their rights as citizens. (F,SP) Staff

170. Selected Topics in Feminist Theory. (4) Course may be repeated for credit with consent of department. Three hours of lecture per week. Prerequisites: Consent of instructor. Formerly Women’s Studies 170. This seminar considers the foundational themes of feminist theory. Students will read and discuss the work of diverse authors, including those from non-Western traditions. (F,SP) Staff

195. Gender and Women’s Studies Senior Seminar. (4) Three hours of seminar per week. Prerequisites: Consent of instructor. Formerly Women’s Studies 195. This seminar is required for all seniors in majoring in gender and women’s studies. The goal of the course is for students to produce a research paper of 25-30 pages that reflects feminist methods, interpretations, or analysis. (F,SP) Staff

196W. Special Field Research. (10.5) Course may be repeated for credit with consent of department. Three hours of seminar per week. Prerequisites: Consent of instructor. Formerly Women’s Studies 196W. Undergraduate students in selected internship programs approved in advance by the faculty coordinator and for which written contracts have been established between the sponsoring organization and the student. Students will be expected to produce two progress reports for their faculty coordinator during the course of the internship, as well as a final paper for the course consisting of at least 35 pages. Other restrictions apply; see faculty adviser. (F,SP) Staff

197. Internship. (2-4) Course may be repeated for credit. Individual conferences and 10 hours of internship required per week. Must be taken on a passed/not passed basis. Prerequisites: Consent of instructor. Formerly Women’s Studies 197. Internship Program: Field work in a variety of settings, including women’s issues plus individual conferences with faculty. Students must present a written scope of work to the supervising faculty member before enrolling. Credit earned depends on the amount of written work completed by students that interprets the experience through diaries, historical reports, and creative work done for the organization. Faculty supervisor and student must agree upon assignments. (F,SP) Staff

198. Directed Group Study for Advanced Undergraduates. (1-4) Course may be repeated for credit. Must be taken on a passed/not passed basis. Prerequisites: Consent of instructor. Formerly Women’s Studies 198. Seminar for group study is selected to meet the regular course requirements. Topics will vary from year to year. (F,SP) Staff

199. Supervised Independent Study for Advanced Undergraduates. (1-4) Course may be repeated for credit. Must be taken on a passed/not passed basis. Prerequisites: Consent of instructor. Formerly Women’s Studies 199. Reading and conference with the instructor in a field that does not coincide with that of any regular course and is specific enough to ensure satisfactory progress. Students may write an essay based upon their studies. (F,SP) Staff

200. Theory and Critical Research. (4) Two to three hours of seminar per week. Prerequisites: Consent of instructor, 104, or the equivalent. Formerly Women’s Studies 200. This course will provide an opportunity for advanced training in the production of diverse products in different disciplines and across disciplines. The course will ground contemporary philosophical and theoretical developments in the study of gender to specific disciplinary bodies of knowledge and class. Students will also participate in organizing and leading class discussions on a rotating basis. (F,SP) Staff

210. Advanced Interdisciplinary Studies. (4) Three hours of lecture and one hour of seminar per week. Prerequisites: Consent of instructor. Formerly Women’s Studies 210. A cross-disciplinary examination of the interdisciplinary research on the study of gender, women, and sexuality. Topics will vary; for example, representations of womanhood, women in the public sphere, work and gender, globalization of society (e.g. globalization of women’s lives). (F,SP) Staff

220. Research Seminar. (4) Three hours of lecture and one hour of seminar per week. Prerequisites: Open to graduate students advanced to Ph.D. candidacy. Formerly Women’s Studies 220. Members of the seminar will present their ongoing dissertation research and critically explore the methodological and theoretical dimensions and implications of their work. (F,SP) Staff

229. Women and Work. (4) Three hours of lecture and one hour of seminar per week. Formerly Women’s Studies 229. This course explores women’s experiences of paid and unpaid labor in the household and the workplace. Historical, economic, and sociological perspectives are brought to bear on such issues as historical changes in the content and location of women’s work; wage inequities and occupational segregation; sexual harassment; individual resistance strategies and collective organizing; class and race differences in women’s work; state and social policy affecting work and family life. Graduate students will research and write a 25-50 page paper for the course. They will also participate in organizing and leading class discussions on a rotating basis. (F,SP) Staff

240. Feminist Cultural Studies. (3) Three hours of lecture and one hour of seminar per week. Formerly Women’s Studies 240. This course introduces students to the interdisciplinary field of women’s cultural studies. Drawing upon contemporary theories of representational politics, the specific focus of the course will vary, but the emphasis will remain on the intersections of gender, race, nation, sexuality, and class in particular cultural and critical practices. Graduate students research and write a substantial (25-50 page) paper for the course. They also participate in organizing and leading class discussions on a rotating basis. (F,SP) Staff

241. Women and World Development. (4) Three hours of lecture and one hour of seminar per week. Prerequisites: Consent of instructor. Formerly Women’s Studies 241. This course will examine women’s lives in developing countries and the impact of development processes and modernization. Students will examine the history of urban micro-entrepreneurs, and the efforts of women’s movements to change both the theory and practice of development. (F,SP) Staff

249. Genres, Embryos, and Shifting Maps of Persons and Parenthood. (4) Two and one-half hours of lecture per week. Prerequisites: Academic standing. Formerly Women’s Studies 291B. Students will investigate a broad range of reproductive issues in which emerging technologies force people to articulate and map new meanings of personhood, parenthood, and family responsibility. Special topics will vary; they will also participate in organizing and leading class discussions on a rotating basis. (F,SP) Staff

*Professor of the Graduate School
†Recipient of Distinguished Teaching Award
LGBT
Lower Division Courses

20AC. Alternative Sexual Identities and Communities in Contemporary American Society. (4) Three hours of lecture per week. An introduction to varied dimensions of alternative sexual identities in the contemporary United States, with a focus ranging from individuals to communities. This course will use historical, sociological, ethnographic, political-scientific, psychological, psychoanalytical, legal, medical, literary, and filmic materials to chart trends and movements from the turn of the century to the present. This course satisfies the American Culture and Society requirement. (F,SP) Staff

98. Directed Group Study for Advanced Undergraduates. (1-9) Course may be repeated for credit. Enrollment is restricted; see the Introduction to Courses and Curriculum section of this catalog. Three hours of seminar per week. Must be taken on a pass/ not passed basis. Prerequisites: Gender and women's studies major. Seminars for group study of selected topics not covered by regularly scheduled courses. Topics will vary from year to year. (F,SP) Staff

Upper Division Courses

145. Interpreting the Queer Past: Methods and Problems in the History of Sexuality. (4) Three hours of lecture/discussion per week. Formerly Undergraduate Interdisciplinary Studies C145. This course examines interpretive issues in studying the history of sexuality and the formulation and construction of sexual identities. Considering primary documents, secondary literature, and theoretical essays, we investigate specific historical and sociological concerns and raise questions about historical methodology and practice. (F,SP) Staff

C146. Cultural Representations of Sexualities: Queer Visual Culture. (4) Three hours of lecture/discussion per week. Formerly Undergraduate Interdisciplinary Studies C146. This course examines modern visual cultures that construct ways of seeing diverse sexualities. Considering Western conventions of representation of the human body and cultural codes of sexuality, we will investigate the role of gate film, television, and video. How and when do “normative” and “queer” sexualities become visually presented during the modern period, we will investigate the social and political cultures and institutions that would be necessary to sustain a newly imagined or re-imagined sexual identity; topics listed as Gender and Women's Studies C146A. (F,SP) Staff

C146A. Cultural Representations of Sexualities: Queer Literary Culture. (4) Three hours of lecture/discussion per week. Formerly Undergraduate Interdisciplinary Studies C146A. This course examines modern literary cultures that construct ways of seeing diverse sexualities. Considering conventions of literary representation during the modern period, we will investigate the social forces and institutions that would be necessary to sustain a newly imagined or re-imagined sexual identity; topics listed as Gender and Women's Studies C146A. (F,SP) Staff

C147B. Sexuality, Culture, and Colonialism. (4) Three hours of lecture per week. Prerequisites: 3 or Sociology 3. An introduction to social theory and ethnographic methodology in the cross-cultural study of sexuality, particularly sexual orientation and gender identity. The course will stress the relationships between culture, international and local political economy, and the representation and experience of what we will provisionally call homosexual and transgendered desires or identities. Also listed as Anthropology C147B.

C148. Ethnicity, Gender, and Sexuality. (4) Three hours of lecture and one hour of discussion per week. Course focuses on the production of sexualities, sexual identification, and gender differentiation across multiple discourses and locations. Also listed as Ethnic Studies C126. (F,SP) Staff

198. Directed Group Study for Advanced Undergraduates. (1-4) Course may be repeated for credit. Enrollment is restricted; see the Introduction to Courses and Curriculum section of this catalog. Three hours of seminar per week. Must be taken on a pass/ not passed basis. Prerequisites: Gender and women's studies major. Seminars for group study of selected topics not covered by regularly scheduled courses. Topics will vary from year to year. (F,SP) Staff

Department Overview

The Department of Geography provides a broad-ranging perspective on humans as inhabitants of Earth, both as transformative agents and as the creators of social spaces. Geography provides an environmental bridge between the natural and human sciences and an interdisciplinary link among the social sciences and human concern with space and spatial relations. As geographic theory and research have expanded their horizons over the past quarter century, three research foci have emerged to define geography at Berkeley:

(1) Earth System Science is concerned with understanding the interlocking subsystems of the natural environment (atmosphere, hydrosphere, biosphere, lithosphere, and cryosphere) in which we live and how they may change with time. Departmental research and teaching in this area aim to provide a complex picture of a dynamic and changing Earth, including landforms, the atmosphere, oceans, ice sheets, and ecosystems. Area strengths lie in climate change variability, glacial and riverine environments, terrestrial biogeochemistry, paleoecology, Quaternary stratigraphy, atmospheric physics and chemistry, and paleoecological reconstruction. Our research blends a rigorous understanding of process with curiosity about large-scale geographical phenomena.

(2) Development and Environment is concerned with the social origins of natural resource use and abuse and the relation of economic growth to environmental quality around the world. Research and teaching in Development and Environment draw upon political ecology and social theory to explore the relations between natural and social systems, emphasizing patterns of access to and control over resources, property and management regimes, and systems of cultural meaning. Special emphasis is given to gendered practices, indigenous rights, religious discourse, and the history of environmental thought.

(3) Local and Global Relations is concerned with the intersection of global processes and locally situated systems of culture, politics, and economics at various spatial scales (urban, regional, national, international). Central concerns of Local and Global Relations are shifting spatial patterns of industry, cities and modern life. Research and teaching address global economic forces, state politics, racial formations, social movements, labor organization, and consumer cultures. Geography students are expected to have diverse interests and independent thought. We welcome students from a variety of backgrounds, including those with professional experience who wish to sharpen their thinking and teaching. Students are encouraged to range freely through the curriculum and to follow their inspiration where it leads, working in tandem with faculty advisors. Graduate students often use two or three faculty in equal measure (including faculty affiliates and members from other departments) and collaborate with faculty on research, writing, and teaching. We expect students to read extensively, develop their research, technical and teaching skills, and produce well-crafted papers, projects, and dissertations.

Extensive information on the department can be found at geography.berkeley.edu.

The Undergraduate Major

Lower Division. Majors take three lower division courses, one of which must be 1 or 40. The other two must be chosen from the following: 10 or 20; 53 or 50AC. (Transfer students should consult with the undergraduate adviser to avoid repeating lower division work.)

Upper Division. Majors take at least eight upper division courses, five of which must be in one specialty group. The remaining three courses must include one from each of the other specialty groups.
and one from the methods group. Everyone choosing Option 1 must take Geography 130; everyone choosing option 2 must take Geography 110; everyone choosing option 3 must take Geography 140A.

I. The Development-Environment Option: Geography 104, 110, 111, C122, 130, 134, 138, C152, 153, 156, C157, 158, 163, 164, 165, 167, 168, 170, 172, 173A, 175, 176,


*Course designation varies according to instructor and content. For more information, consult the undergraduate adviser.

The Minor

Students in the College of Letters and Science may complete one or more minors of their choice, normally in a field both academically and administratively distinct from their major.

Required: A minimum of five upper division courses, all taken for a letter grade. Students must maintain an overall grade-point average of 2.0 for all courses taken for the minor. A minimum of three courses must be taken on the Berkeley campus. Students must take at least one course in the physical area (109, 134, C136, 139, 140A, C140B, C141, 142, 143, 144, C145, 148, 171, 175, 180) and one course in the human area from among the courses listed in the range of Geography 104-170. Students may select courses in the range of 175-189, but several of those courses have limited enrollment and require permission of the instructor. Geography 197, 198, and 199 cannot be used to satisfy a minor program requirement. Students should contact the student services office to obtain an update to the courses listed above.

Graduate Program

The graduate program is directed toward the Ph.D. Students are admitted to graduate studies only in the fall semester. The GRE general examination is required. For admissions information contact (510) 642-3904 or consult the department’s web page at geography.berkeley.edu/ProgramCourses/GradProgram/Grad.Broch.html.

The Doctoral Program

All students take Geography 200A-200B in the first year and must take at least 8 units every semester (primarily in the form of appropriate graduate seminars) before taking the qualifying exam and advancing to candidacy.

By the end of the third year, students entering with a B.A. or B.S. must hand in a paper that would be suitable, in length and in quality, for submission to an academic or scientific journal. The paper must be handed in and approved by the main advisor no later than a month before the qualifying exam.*

Prior to taking the Qualifying Examination, all students must prepare a preliminary dissertation prospectus of between five and ten pages for their exam committee.

The qualifying exam (the "oral") must be taken by the end of the third year, although it is recommended that students enter with a master's degree take it by the end of their second year. The exam is based on a discussion of three broad geographic fields built around bibliographies produced in consultation with the examining committee. Before starting dissertation research, each student should have a proposal, drafted no later than the third year. This proposal describes the student's research project, including which student discusses a written research proposal—with at least two members of the Exam Committee. The Ph.D. dissertation is written under the supervision of a committee of three University faculty members, one of whom must be from outside the Geography Department and a member of the Berkeley Academic Senate. Upon final acceptance of the dissertation, the degree of Ph.D. is awarded. Students are expected to complete the Ph.D. by the end of their sixth year in the program.

*Students who do not hand in satisfactory papers can be terminated from the program and awarded terminal M.A. degrees.

**Students who do not pass the qualifying exam can be terminated from the program and awarded terminal M.A. degrees.

Lower Division Courses

1. Global Environmental Change. (4) Three hours of lecture and one hour of discussion per week. This course will provide a framework for recognizing and analyzing the major distinctive regions of the world and for understanding the interactions between environment, economy, ethnicity, and the national identity and viability of states will be explored. Sayre C15. Geographies of Race and Gender. (4) Three hours of lecture and one hour of mandatory discussion per week. This course focuses on the impact of gender inequality and racial discrimination on globalization. The course examines (a) how supposedly "natural" differences are actually produced through everyday practices in particular spatial contexts; (b) the historical and cultural geographies of race and gender in the U.S. in relation to those in other parts of the world, including South Africa; and (c) how these concepts can help us think critically and constructively about questions of social change in the face of globalization. Also listed as African American Studies C15 and Gender and Women's Studies C15.

2. Globalization. (3) Three hours of lecture and one hour of discussion per week. This course explores the understanding of gender inequality and racial discrimination in a globalizing world? The course examines (a) how supposedly "natural" differences are actually produced through everyday practices in particular spatial contexts; (b) the historical and cultural geographies of race and gender in the U.S. in relation to those in other parts of the world, including South Africa; and (c) how these concepts can help us think critically and constructively about questions of social change in the face of globalization. Also listed as African American Studies C15 and Gender and Women's Studies C15.

3. California. (4) Three hours of lecture and one hour of discussion per week. Formerly 150AC. California has been called "the great exception" and "America, only more so." Yet few of us pay attention to its distinctive traits and to its effects beyond our borders. California may be a "state of mind," but it is also the most dynamic place in the most powerful country in the world, and would be the 5th largest economy if it were a country. Its wealth has been built on mining, agriculture, industry, trade, and finance. Natural abundance and geographic advantage have played their part, but the state's power and wealth result in the mosaic of environments on the earth and the controls on the distribution of ecosystems. Environmental change is explored on a variety of time and spatial scales so as to enhance our ability to distinguish between natural and human-induced climatic, biotic, and physical changes. (F.SP) Chiang, Cuffey, Rhew 50AC. California. (4) Three hours of lecture and one hour of discussion per week. Formerly 150AC. California has been called "the great exception" and "America, only more so." Yet few of us pay attention to its distinctive traits and to its effects beyond our borders. California may be a "state of mind," but it is also the most dynamic place in the most powerful country in the world, and would be the 5th largest economy if it were a country. Its wealth has been built on mining, agriculture, industry, trade, and finance. Natural abundance and geographic advantage have played their part, but the state's power and wealth result in the mosaic of environments on the earth and the controls on the distribution of ecosystems. Environmental change is explored on a variety of time and spatial scales so as to enhance our ability to distinguish between natural and human-induced climatic, biotic, and physical changes. (F.SP) Chiang, Cuffey, Rhew

50AC. California. (4) Three hours of lecture and one hour of discussion per week. Formerly 150AC. California has been called "the great exception" and "America, only more so." Yet few of us pay attention to its distinctive traits and to its effects beyond our borders. California may be a "state of mind," but it is also the most dynamic place in the most powerful country in the world, and would be the 5th largest economy if it were a country. Its wealth has been built on mining, agriculture, industry, trade, and finance. Natural abundance and geographic advantage have played their part, but the state's power and wealth result in the mosaic of environments on the earth and the controls on the distribution of ecosystems. Environmental change is explored on a variety of time and spatial scales so as to enhance our ability to distinguish between natural and human-induced climatic, biotic, and physical changes. (F.SP) Chiang, Cuffey, Rhew

51. Political Economy of Development in East Asia. (3) Three hours of lecture and one hour of discussion per week. This course focuses on the political economy of development in East Asia. Topics include the colonial histories and legacies in East Asia, the transition of the development state, transformation of former socialist economies, technology exchange and transfer in the Pacific Rim, and generational transitions of women workers in the global economy, the politics of deforestation, and Asian financial crises and recovery. Cases used to illustrate the development issues in East Asia include China, South Korea, Singapore, Taiwan, Malaysia, Indonesia, Vietnam, and Thailand. (SP) Hsing

C55. Introduction to Central Asia. (3) Three hours of lecture per week. Formerly 55. This course will introduce the student not only to ancient and modern Central Asia, but also to the region in the shaping of the history of neighboring regions and regimes. The course will outline the history, languages, ethnicities, religions, and archaeology of the region and...
will acquaint the student with the historical foundations of some of the political, social and economic challenges for contemporary post-Soviet Central Asian republics. Also listed as Near Eastern Studies C25.

70AC. The Urban Experience. (4) Three hours of lecture and one hour of discussion per week. We will track the historical evolution of the American city. We’ll look at the economics of city life, at the organization of metropolitan political power, and at the aesthetics of the urban scene—to see how the core cultural themes of American urban life have endured over time while continuously adjusting to new circumstances. Our approach is to focus on major themes in urban life and to show how various groups have had different kinds of experiences in these urban realms. This course satisfies the American Cultures requirement.

84. Sophomore Seminar. (1,2) Course may be repeated for credit as topic varies. One hour of seminar per week per unit for 15 weeks. One and one-half hours of seminar per week per unit for 10 weeks. Two hours of seminar per week per unit for eight weeks. Three hours of seminar per week per unit for five weeks. Sections 1-2 to be graded on a pass/fail basis. Sections 3-4 to be graded on a letter grade basis. Prerequisites: At discretion of instructor.

90. Seminars for Lower Division Students. (3) Three hours of seminar and one hour of consultation per week. A reading and research seminar for freshmen and sophomore students. Topics to vary.

98. Directed Group Study. (1-4) Course may be repeated for credit. One to four hours of group study (or fieldwork) per week. Must be taken by seniors and students in the crucial second year. The topics vary from department to department and semester to semester. Up to 15 hours are allowed per term.


110. Economic Geography of the Industrial World. (4) Three hours of lecture and one hour of discussion per week. Prerequisites: 20 or prior courses in economic or regional development strongly suggested. Industrialization, urbanization, and economic growth in the modern metropolises: economy, society, politics, culture, and geography. Cities as the economic engines of capitalism, centers of industry, finance, business, commerce, consumption, and innovation. Cities as political power and political pawns, and the government of cities, suburbs, and metropolitan areas. Cities as magnificent constructs, built of concrete, credit and land rents, from skyscrapers to housing projects, from shopping malls to open spaces. Cities as landscapes of social division by class, race and nationality, and the turf battles from mean ghetto streets to the hideaways of privilege. Cities as cultural hearts, places of high art and popular entertainment, style and monumentality, rebellion and desire. The geography of civic upheaval, as urban space is constantly remade by growth, ecological shifts, building, gentrification and redevelopement. (FSP) Johns, Walker

125. The American City. (4) Three hours of lecture and one hour of discussion per week. The American city, palatial but susceptible to the forces of economic change and challenges to U.S. dominance. (F,SP)

128. Postcolonial Geographies. (4) Four hours of lecture per week. Postcolonial studies focus on how processes of colonialism/imperialism continue even after the formal dissolution of empire. A central argument of this course is that geography can make important contributions to understanding the interconnections between forces at play in different parts of the world. Drawing on concepts of space, place, culture, power, and difference, its purpose is to provide a set of tools for grappling with the conditions in which we find ourselves, and for thinking about the possibilities for social change. (F) Hart

130. Natural Resources and Population. (4) Three hours of lecture per week. Are there enough energy, water, mineral, and land resources for the world’s population? What are the trade-offs among alternative uses of natural resources? What are the demographic impacts of the world’s populations? (F) Sayre, Watts

134. Natural Hazards and Problems. (4) Three hours of lecture per week. An ecological approach to the study of natural processes and urban, agricultural, and human use systems; perceptions of and adaptations to natural hazards such as floods, droughts, earthquakes, tornadoes, and volcanic eruptions.


138. Political Ecology of the Third World. (4) Three hours of lecture per week. An ecological perspective on the political and social relations affecting ecological conditions in the Third World. Topics include environmental degradation, migrations, agricultural production, role of international aid, divergence in standard of living, political power, participation and decision making, access to resources, global environmental policies and treaties, political strife and war. (F,SP)

C139. Atmospheric Physics and Dynamics. (3) Three hours of lecture/discussion per week. Prerequisites: Mathematics 53, 54; Physics 7A-7B-7C. This course examines the processes that determine the structure and circulation of the Earth’s atmosphere. The approach is deductive rather than descriptive: to figure out the properties and behavior of the Earth’s atmosphere based on the laws of physics and fluid dynamics. Topics will include interaction between radiation and atmospheric composition; the role of water vapor in the energy and radiation balance of the atmosphere; conditions for atmospheric motion, mass conservation, and thermodynamic energy balance; geostrophic flow, quasigeostrophic motion, baroclinic instability and dynamics of extratropical cyclones. Also listed as Earth and Planetary Science C181.

140A. Physical Landscapes: Process and Form. (4) Four and one-half hours of lecture per week. Prerequisites: 1 or equivalent. Formerly 140. Understanding the physical characteristics of the Earth’s surface, and the processes active on it, is essential for maintaining the long-term health of the environment, and for appreciating the unique, defining qualities of geographic regions. In this course, we build an understanding of global tectonics, rivers, hillslopes, and coastlines and discover how these interact in concert with the underlying geologic framework to produce the magnificent landscapes of our planet. Through our review of formative processes, we learn how physical landscapes change and are susceptible to human modifications, which are often unintentional. Cuffey

140B. Physiography and Geomorphologic Extremes. (4) Three hours of lecture and one hour of discussion per week. Prerequisites: 140A (formerly 140), or Geology 117, or equivalent. In this course we review landscapes and processes in extrême environments: hot arid regions, glacial and periglacial landscapes, and karst terrain. Using this knowledge, plus an understanding of tectonics and temperate watersheds (gained from prerequisite courses), we explore how unique combinations of geomorphic processes acting on tectonic and structural provinces have created the spectacular and diverse landscapes of the world. Regions to be explored include the Colorado Plateau, Sierra Nevada, North Cascades, Northern and Southern Rockies, Great Plains, Appalachian Highlands, and Mississippi Delta. Cuffey

C141. Paleoclimatology. (3) Three hours of lecture and two hours of discussion per week. Earth’s climatic changes have been substantial throughout geologic history, and these changes constitute fascinating natural experiments that reveal much about the earth’s climate systems and their capacity for change. In this course we review important paleoclimatic records to construct a history of climate reconstruction and also current knowledge of past climate changes throughout earth’s history, with an emphasis on those of the Quaternary. Methods to be explored include analysis of lithostratigraphy, and paleontologic and paleoclimate characteristics of marine sediments, coral reefs, coastal sediments, lake sediments, tree rings, and ice cores. Also listed as Earth and Planetary Science C141. Cuffey, Ingram

142. Climate Dynamics. (4) Three hours of lecture per week and one or two computer laboratory projects. This course examines how various components of the climate system—the atmosphere, ocean, land, and cryosphere—interact in determining its observed state. Topics include: climate dynamics: ocean circulation; the earth’s energy balance; atmospheric radiative transfer; the surface energy balance; the hydrologic cycle; atmospheric circulation and its relation to the energy balance; the role of the ocean and the cryosphere. Additional topics, as time permits, will cover climate change, natural and anthropogenic; and computer modeling of climate. Chiang

143. Global Change and Biogeochemistry. (4) Three hours of lecture and one hour of discussion per week. Prerequisites: Chemistry C104. Formerly Earth and Planetary Science C181. The field of biogeochemistry offers an interdisciplinary approach to modern global environmental issues, such as climate change feedback effects, stratospheric ozone loss, oxidation capacity of the atmosphere, land use change, and marine ecosystem health. Earth is a complex system where the transformation and flow of chemicals and energy within and between biomes
have ramifications for life on this planet. The overall theme of this course will be to explore the imprint of the biota (including humans) on the chemistry of the oceans and the atmosphere. This course will explore the biogeochemical cycles of terrestrial, freshwater, and marine biomes. In addition, the global cycles of environmentally important elements and gases will be explored. 

144. Principles of Meteorology. (4) Three hours of lecture and discussion per week. Weather development in relation to different scales of atmospheric circulation including analysis and forecasting with examples from the Northeastern Pacific-Western North American area.

C145. Geological Oceanography. (4) Three hours of lecture and two hours of laboratory per week. Prerequisites: Upper division standing. The tectonics and morphology of the sea floor, the geologic processes in the deep and shelf seas, and the climatic record contained in deep-sea sediments. This course will cover sources and composition of marine sediments, sea-level change, ocean circulation, paleoenvironmental reconstruction using fossils, imprint of climatic zonation on marine sediments, marine stratigraphy, and ocean floor. Also listed as Earth and Planetary Science C146. Groth

148. Biogeography. (4) Three hours of lecture per week. Prerequisites: 1 or a lower division course in Biology or Earth Science. Changing distribution patterns of biota from a variety of spatial and temporal scales. The effects of “continental drift,” Pleistocene climatic change, agricultural origins and dispersals. The ecology of invasions and extinctions. Island biogeography. Byrne

C152. Multicultural Europe. (4) Three hours of lecture per week. Formerly Interdisciplinary Field Studies 145. This course will trace some of the substantive changes and transformations taking place in contemporary Europe in the areas of culture, society, and politics. In particular, we will look at the effects of mass migration due to globalization processes—on the national culture of the core countries and examine the ways in which particular national cultures react to the increasing multiculturalization of Europe. The goal of the course is, first of all, to familiarize students with a variety of cultural, social, and political innovations that accompany the formation of multicultural Europe. This involves (1) an examination of the concepts of nationality and citizenship, and (2) a study of the Europeanization of culture. Also listed as History C176, Interdisciplinary Studies Field Maj C145, and International and Area Studies C145.

153. What’s in a Rim? Geography of Social and Economic Development in East Asia. (3) Three hours of lecture per week. This course focuses on development issues in East and Southeast Asia. Topics include the colonial legacy in Southeast Asia, the ups and downs of the “developmental state,” women and downs of the “developmental state,” women and gender, and the environment. It also takes a critical view of the presentation and representation of East Asia, examining the construction of geographical terms such as Pacific Rim and Greater China. Students are expected to participate and make thoughtful contributions to class discussions. This is a lecture course designed mainly for upper-level undergraduate students with background in East Asian studies or development studies.

156. Political Economy and Historical Geography of Latin American Development. (4) Three hours of lecture per week. This course examines the problems of development and underdevelopment in Latin America, focusing on the role of transnational economic and social forces against the metropole, and the role of the states in the process. Three hours of seminar and discussion per week. Prerequisites: Consent of instructor. 

157. Central American Peoples and Cultures. (4) Three hours of lecture per week. A comparative survey of the peoples and cultures of the seven countries of the Central American isthmus from a historical and contemporary perspective. Also listed as Chicano Studies C161. Manz

159AC. The Southern Border. (4) Four hours of lecture/discussion per week. The southern border—from California to Florida—is the longest physical divide between the First and Third Worlds. This course will examine the border as a distinct landscape where North-South relations take on a specific spatial and cultural dimension, and as a region which has been the testing ground for such issues as free trade, immigration, and ethnic politics. Also listed as Education 186AC and Ethnic Studies 159AC. This course satisfies the American Cultures requirement. Manz, Shaken

C160A. American Cultural Landscapes, 1600 to 1900. (4) Three hours of lecture and one hour of discussion per week. Introduces ways of seeing and interpreting American histories and cultures, as revealed in everyday built surroundings—houses, highways, farms, factories, stores, recreation areas, small towns, city districts, and regions. Encourages students to read landscapes as records of past and present social relations and to speculate for themselves about cultural meaning. Also listed as American Studies C112A and Environmental Design C169A. (F) Groth

C160B. American Cultural Landscapes, 1900 to the Present. (4) Three hours of lecture and one hour of discussion per week. Introduces ways of seeing and interpreting American histories and cultures, as revealed in everyday built surroundings—houses, highways, farms, factories, stores, recreation areas, small towns, city districts, and regions. Encourages students to read landscapes as records of past and present social relations and to speculate for themselves about cultural meaning. Also listed as American Studies C112B and Environmental Design C169B. (SP) Groth

164. The Geography of Economic Development in China. (3) Three hours of lecture per week. This course focuses on four issues in contemporary China: (1) the transformation of the socialist state, (2) the politics of resource and land reform, (3) the interplay of government and class in the transitional society, and (4) Chinese Diaspora and business networks in the context of globalization. Each of these issues will be examined with reference to theories of development and histories of China. We will also take a critical approach in our exploration of China’s development. This is a lecture course designed mainly for upper level undergraduate students with preliminary background in East Asian Chinese studies or development studies or, Haing

165. Africa: Ecology and Development. (4) Three hours of lecture per week. An overview of selected issues in the development of sub-Saharan Africa. Topics include rural development, ecological change, demography, migration, urban growth, agricultural development, and peasant economy.

170. Special Topics in Geography. (3) Course may be repeated for credit with different topic. Three hours of lecture per week. This course is designed to provide a vehicle for instructors to address a topic with which they are especially concerned; usually more restricted than the subject matter of a regular lecture course. Topics will vary with instructor. See departmental announcements.

172. Topics in Social Geography. (4) Course may be repeated for credit with different instructor or different topic. Three hours of lecture/discussion per week. This course is designed to provide a vehicle for instructors to address a topic in social geography with which they are especially concerned; usually more restricted than the subject matter of a regular lecture course. Topics will vary with instructor. See departmental announcements. (F)

173A. Cross-listed Topics in Human Geography. (1-4) Course may be repeated for credit. One to four hours of lecture per week. This course is designed to accommodate the scheduling preferences of other departments, the content of which is applicable to geography majors. Content and unit values vary from course to course. (F,SP)

173B. Cross-listed Topics in Physical Geography. (1-4) Course may be repeated for credit. One to four hours of lecture per week. This course is designed to accommodate cross-listed courses offered through other departments, the content of which is applicable to geography majors. Content and unit values vary from course to course. (F,SP)

175. Undergraduate Seminars. (4) Course may be repeated for credit with different topic and consent of instructor. Three hours of seminar per week. A reading and research seminar for undergraduate students. Topics will vary with instructor.

180. Field Methods for Physical Geography. (5) Two hours of lecture per week and six weekend field trips. Prerequisites: 1 or equivalent, and consent of instructor. Field introduction to geomorphology, biogeography, and California landscapes. Students confer on projects and reports as results of field projects are analyzed and presented as a technical report. Oral field reports are required for some trips.

181. Urban Field Study. (4) One hour of lecture and nine hours (one day) of fieldwork per week. Prerequisites: Consent of instructor. Introduction to the metropolitan Bay Area: its history, economy, social makeup. Evolution of urban landscapes and spatial patterns. Social justice and conflict in the city. Business and industry location, retail, housing, producing and consuming in the city. Regional characteristics of class, race, gender and politics. Walker

183. Cartographic Representation. (4) Two hours of lecture and six hours of laboratory per week. Problems in the representation of quantitative and qualitative data on thematic maps.

188. Geographic Information Systems. (4) Three hours of lecture and two hours of laboratory per week. Prerequisites: Some computer experience. Formerly C188X. This course introduces the student to the rapidly expanding field of Geographic Information Systems (GIS). It addresses both theory and application and provides the student with a dynamic analytical framework within which temporal and spatial data and information is gathered, integrated, interpreted, and manipulated. It emphasizes a conceptual appreciation of GIS and offers an opportunity to apply some of those concepts to contemporary geographical and planning issues. Also listed as Landscape Architecture C188. (F) Radke

H195A-H195B. Honors Course. (1-4) Course may be repeated for credit. Hours to be arranged. Prerequisites: Admission to Honors Program. Required for Honors in Geography. Students will write a thesis. One or two semesters, at the instructor’s option; if two semesters, credit and grade are awarded upon completion of the sequence. (F,SP)

197. Field Study in Geography. (1-4) Course may be repeated for credit. Regular individual meetings with faculty sponsor. Must be taken on a passed/not passed basis. Prerequisites: Consent of instructor. Supervised experience in application of geography in off-campus organizations. Regular individual meetings with faculty sponsor and written reports required. (F,SP)

198. Directed Group Study. (1-4) Course may be repeated for credit. One to four hours of directed group study per week. Must be passed/not passed basis. Prerequisites: Consent of instructor. (F,SP)

199. Supervised Independent Study. (1-4) Course may be repeated for credit. Must be taken on a passed/not passed basis. Prerequisites: Senior standing. Overall GPA in major of 3.00. (F,SP)

Graduate Courses

200A-200B. The Geographical Point of View. (4) Three hours of seminar and discussion per week. Prerequisites: Consent of instructor. Required of all first year graduate students. The class has several goals. One is to give students a sound basis upon which to judge arguments. A second is to help them to think, and write, geographically—that is, to interpret the making and meaning of our physical and human landscapes. A third goal is to introduce students to the tremendous range of geographical inquiry
and what is probably the major strength of geography as a form of thought: to wit, making links across space, among peoples, and between humans and the earth. Sequence begins in the fall. Johns

203. Nature and Culture: Social Theory, Social Environment. (4) Three hours of seminar per week. The relationship between societies and natural environments lies at the heart of geographical inquiry and has gained urgency as the rate and scale of human transformation of nature have grown, often outstripping our understanding of causes and effects. The physical side of environmental science has received most of the emphasis in university research, but environmental research today must be studied as well. Recent developments in social theory have much to offer environmental studies, while the latter has, in turn, exploded many formerly safe assumptions about what the environment means and how to conduct research and understand the human and environmental world. C242.

214. Development Theories and Practices. (4) Three hours of lecture and one hour of consultation per week. This course examines how concepts and theories of "development" have been produced, maintained, and used to understand the possibilities and constraints of development. The seminar will be designed for students intending to do research on topics of comparative and international development, particularly anthropological ones. Hart

215. Seminar in Comparative and International Development. (4) Three hours of seminar and one hour of consultation per week. This seminar is designed for students intending to do research on topics of comparative development, the organization of work, and access to resources in different regions of the world economy. Participants in the seminar will be expected to write a research proposal and to participate actively in reading and responding to each other's work. Hart

220. Capital, Value, and Scale. (4) Three hours of seminar per week. This seminar focuses on major works in political economy and social theory concerning capitalism, human action, and space-time. First we grapple with what "value" means in volume 1 of Capital, paying particular attention to issues of historical specificity, abstract labor time, and the "value theory of labor," then we spatialize the argument by a close reading of David Harvey's classic, Limits to Capital. Next, we turn to ideas about a capital's geographical relations to human action and other forms of value, specifically in anthropology and the work of Pierre Bourdieu. Finally, we take up the issue of scale in focus on finding a coherent conceptual framework for integrating across scales, from the human-body (or even smaller scales) up to global economic, cultural, and ecological processes. (F,SP) Sayre

C247. Geological Oceanography. (4) Three hours of lecture per week. The tectonics and morphology of the sea floor, the geologic processes in the deep and shelf seas, and the climatic record contained in deep-sea sediments. The course will cover sources and components of sediments, marine stratigraphy, and ocean floor resources. Also listed as Earth and Planetary Science C246. Ingram

C248. Introduction to Field and Laboratory Methods in Earth System Science. (4) Course may be repeated for credit. Three hours of lecture per week, plus weekly laboratory visits or field trips. Earth system science is an interdisciplinary field that probes the interaction between the atmosphere, biosphere, lithosphere, and hydrosphere. This class will introduce essential laboratory and field-based research techniques in earth system science, including material selection, measurement fundamentals, gas collection, gas analyses, field methods, and data storage. This class is designed for graduate students, although upper-level undergraduates may enroll with consent of instructor. Rhex

C250. Seminar in Sociology of Forest and Wildland Resources. (3) Three hours of lecture per week. Prerequisites: Consent of instructor. Formerly 250. Individual projects and group discussions concerning social constraints to, and effects of, natural resource planning and management. Application of sociological theories to problems of managing wildland ecosystems. Three hours of seminar per week. See syllabus for credit. Three hours of seminar per week. See syllabus for credit. Rhex

C251. Topics in Cultural Geography. (4) Course may be repeated for credit. Two hours of seminar and one hour of consultation per week. Research seminar on selected topics in cultural geography. Groth, Walker

252. Topics in Economic Geography. (4) Course may be repeated for credit. Two hours of seminar per week. Research seminar on selected topics in economic geography. Haung, Shaiken, Walker, Watts

253. Topics in Urban Geography. (4) Course may be repeated for credit. Two hours of seminar and one hour of consultation per week. Research seminar on selected topics in urban geography. Groth, Walker

255. Topics in Political Geography. (4) Course may be repeated for credit. Two hours of seminar and one hour of consultation per week. Research seminar on selected topics in political geography. Hart

257. Topics in Climatology. (4) Course may be repeated for credit. Two hours of seminar and one hour of consultation per week. Research seminar on selected topics in climatology. Chiang

259. Topics in Social Geography. (4) Course may be repeated for credit. Three hours of seminar and one hour of consultation per week. Research seminar on selected topics in social geography.

260. Topics in Biogeography. (4) Course may be repeated for credit. Two hours of seminar and one hour of consultation per week. Research seminar on selected topics in biogeography. Byrne

261. Field and Laboratory Techniques in Quaternary Paleoclimatology. (4) Three hours of seminar/ laboratory per week, plus out of class work. Formerly Interdepartmental Studies 260. Recovery of sediment cores from lakes and marshes. Field work usually in California or Mexico. Non-destructive methods of core analysis and magnetic susceptibility, x-ray diffraction, petrography, image analysis. Extraction of fossil pollen, seeds, and microscopic charcoal. Pollen and seed identification, photomicroscopy, charcoal scanning. Statistical analysis and graphical presentation of data. Byrne

280. Advanced Field Study in Geography. (3-7) Course may be repeated for credit. One hour of lecture and eleven hours of fieldwork per week. All day Saturday. Each additional unit requires four hours of field work per week. Extended field project required.

295. Geography Colloquium. (1) Course may be repeated for credit. One and one-half hours of lecture per week. Must be taken on a satisfactory/unsatisfactory basis. Prerequisites: Required of all graduate students not yet advanced to candidacy. Invited lectures on current research. Three hours of seminar and one hour of consultation per week. See syllabus for credit. Three hours of seminar and one hour of consultation per week. See syllabus for credit. Chiang

297. Directed Field Studies. (1-6) Course may be repeated for credit. Must be taken on a satisfactory/unsatisfactory basis. Prerequisites: Open to students directly engaged in field studies. Three hours of seminar and one hour of consultation per week. See syllabus for credit. Three hours of seminar and one hour of consultation per week. See syllabus for credit. Chiang

298. Directed Study for Graduate Students. (1-6) Course may be repeated for credit. Sections 1-20 to be graded on a satisfactory/unsatisfactory basis. Sections 21-41 to graded on a letter-grade basis. Special tutorial work on selected topics covered by available courses or seminars. (F,SP)

299. Individual Research. (1-8) Course may be repeated for credit. Individual research for graduate students in consultation with staff member. (F,SP)

301. Individual Study for Master’s Students. (1-6) Course may be repeated for credit. Course does not satisfy unit or residence requirements for master’s degree. Must be taken on a satisfactory/unsatisfactory basis. Prerequisites: For candidates for master’s degree. Individual study for comprehensive or language requirements in consultation with the field adviser. (F,SP)

302. Individual Study for Doctoral Students. (1-6) Course may be repeated for credit. Course does not satisfy unit or residence requirements for doctoral degree. Must be taken on a satisfactory/unsatisfactory basis. Prerequisites: For candidates for doctoral degree. Individual study for comprehensive or language requirements in consultation with the field adviser. (F,SP)
B prefix=language course for business majors
AC prefix=course satisfies R&C requirement
H prefix=honors course
R prefix=course satisfies American Cultures requirement

German
(College of Letters and Science)
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Professors
Robert C. Holub, Ph.D. University of Wisconsin, Madison
Anton Kaes, Ph.D. Stanford University
Claire J. Kramsch, Agregation d’Allemant, Sorbonne
William W. Klein, Ph.D. University of California, Berkeley
Niklaus Largier, Ph.D. University of Zurich
Immergard Rauch, Ph.D. University of Michigan
Thomas F. Shanoff, Ph.D. Indiana University
Eisne C. Tennant, Ph.D. Harvard University
W. Daniel Wilson, Ph.D. Cornell University
Bluma Goldstein (Emeritus), Ph.D. Harvard University
Gerd Hillen (Emeritus), Ph.D. Stanford University
Joseph Mileck (Emeritus), Ph.D. Harvard University
Hans Sluga (Emeritus), Ph.D. Stanford University
Kaja Silverman, Ph.D.
Eckhard Schroeter, Ph.D.
Alan Nelson, Ph.D.
Martin Jay, Ph.D.
Gary B. Holland, Ph.D.
Daniel Heartz, Ph.D.
Ernst B. Haas, Ph.D.
Mel Gordon, Ph.D.
Hannah Ginsborg, Ph.D.
John Efron, Ph.D.
Carol J. Clover, Ph.D.
Richard M. Buxbaum, Ph.D.
Margaret L. Anderson, Ph.D.
Lecturers
Nikolaus Euba, M.A. Ludwig Maximillian University, Munich
Inez Holland, Ph.D. University of Nijmegen in the Netherlands
Affiliated Faculty
Margaret L. Anderson, Ph.D. (History)
Thomas Brady, Ph.D. (Philosophy)
Judith Butler, Ph.D. (Rhetoric)
Richard M. Bushbaum, Ph.D. (Boalt Hall School of Law)
Pheng Cheah, Ph.D. (Rhetoric)
Gary Cosh, Ph.D. (Scandinavian)
David Cohen, Ph.D. (Rhetoric)
John Connelly, Ph.D. (History)
Hubert L. Dreyfus, Ph.D. (Philosophy)
John Elton, Ph.D. (History)
Barry Eichenhofer, Ph.D. (Economics)
Gerald Feldman, Ph.D. (History)
Hannah Ginsburg, Ph.D. (Philosophy)
Mel Gordon, Ph.D. (Theater, Dance, and Performance Studies)
Emir Hatem, Ph.D. (Political Science)
Daniel Heartz, Ph.D. (Music)
Gary B. Holland, Ph.D. (Philosophy)
Kathleen James, Ph.D. (Architecture)
Martin Jay, Ph.D. (History)
John Lindop, Ph.D. (Scandinavian)
Alan Nelson, Ph.D. (English)
Anthony Newcomb, Ph.D. (Music)
John D. Niles, Ph.D. (English)
Linda Rugg, Ph.D. (Scandinavian)
Mark Sandberg, Ph.D. (Scandinavian)
Karin Sanders, Cand. Mag. (Scandinavian)
Eckhard Schroeter, Ph.D. (Political Science)
Kaja Silverman, Ph.D. (Rhetoric and Film)
Hans Sluga, Ph.D. (Philosophy)
D. Paul Thomas, Ph.D. (Political Science)

Department Overview
The Department of German offers undergraduates the opportunity to obtain a broad background in the field of German language, literature, and culture, and introduces them to the principles of literary analysis and criticism. German language instruction ranges from elementary courses to advanced courses in German style. Upper division courses cover German literature from the earliest times to the present, as well as the linguistic study of German. The graduate program in literature and culture emphasizes seminars and courses with an in-depth study of more specialized areas. The graduate offerings in linguistics constitute a complete program of study in Germanic languages. Instruction in methodology is provided for graduate student instructors and prospective teachers, and seminars in applied linguistics and second-language acquisition provide a theoretical and practical foundation for teachers.

The curriculum of Dutch Studies focuses upon the language, literature, and culture of The Netherlands and Flanders.

The Major
Lower Division. German 1.2.3.4, or their equivalent.

Upper Division. Ten upper division courses totaling at least five courses and 15 units must be taken at Berkeley. The following courses are required: German 100, 101, and 102. Three additional courses in which a knowledge of German is required, as indicated in the course descriptions that follow or in the departmental booklet; German 100 or 101 is prerequisite for these courses. Two courses may be taken from a list of affiliating courses taught by the German Department. (The list is available in the German Department.) Courses must be taken in the literature and culture of at least two different centuries; consult the major adviser or undergraduate assistant when in doubt about this requirement.

Transfer Students. If you are transferring from another institution and wish to declare a major in German, see the major adviser or the undergraduate assistant.

Honors Program. A grade-point average of 3.5 in the major and an overall GPA of 3.3 are required for participation in the program during the senior year.

Course requirement: Any course in the 195 series and an honors thesis (H196). The Honors Committee, consisting of the major adviser and the thesis director, approves the topic and evaluates the thesis.

The Minor
Lower Division. German 1.2.3.4, or their equivalent.

Upper Division. Five courses (of which three must be taken at Berkeley). Students must enroll in at least two courses in which the knowledge of German is required (see the course descriptions that follow or the departmental booklet for current information). One affiliated course from another department or a course in Dutch from the German Department may be applied to the minor.

A letter grade of C or better is required for each upper division course applied to the minor.

Graduate Program
The M.A. Program: A Bachelor of Arts degree (or its equivalent) in German or a related field is required for admission to either the literature and culture option or the linguistics option.

1. Literature and Culture Option: Students are not admitted solely to pursue the M.A., which is an integral part of the Ph.D. program. Students must complete 24 units, 12 of which must be in graduate courses in the German Department. An examination, involving interpretation of a literary text, normally is taken in the third semester.

2. Linguistics Option: The program offers a broad range of courses in contemporary and historical language and the methods of German and Germanic linguistic, including recent directions in such approaches as discourse grammar, linguistic field work, and semantics. Students have to complete at least 37 units, 28 of which must be in graduate courses. A knowledge of Middle High German as well as proficiency in oral and written New High German are necessary in order to pass the degree upon passing a written examination.

For more detailed information on the M.A. program in literature and linguistics, students should consult the German Department’s “Information Sheet for Graduate Students.”

The Ph.D. Program: The German Department offers a Ph.D. in both German linguistics and in German literature and culture. The program aims at a comprehensive historical and interdisciplinary background in German literature and culture, and students are required to take courses in both linguistic and cultural studies. The Ph.D. program includes the following requirements:

1. Doctor of Philosophy: Literature and Culture. The Ph.D. program in literature and culture offers a broad historical overview of German literature and culture, and students are expected to complete a comprehensive knowledge of different cultural fields, such as literature, popular culture, and intellectual history, a working familiarity with the ability to pursue original research and to argue their ideas convincingly both in written and oral English.

2. Doctor of Philosophy: Linguistics. An M.A. in German linguistics or its equivalent is a prerequisite for admission. Students are expected to consult their graduate adviser in order to set up their best plan of study for the Ph.D. For their dissertation research, students may choose to concentrate on contemporary or historical German language. They are expected, however, to become knowledgeable in all periods of the history of the German language as well as in all components of its grammar. As part of their training, students are encouraged to participate in public lecture forums, both on and off campus, and to learn to write publishable papers.

Language requirements: a reading knowledge of two foreign languages other than German, or advanced cultural competence in one foreign language other than German.

Dutch Studies
A description of the group major in Dutch studies can be found in the Dutch Studies section of the catalog. Descriptions of the courses presenting the languages, literature, history, and culture of the Netherlands offered by the Department of German follow the German courses.

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Dutch Studies
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German
Lower Division Courses

1. Elementary German 1. (5) Five hours of lecture per week. All four foreign language skills (reading, writing, speaking, and listening) are addressed to help students acquire communicative competence in the German
language while being sensitized to the links between language and culture. This course is for students with no prior knowledge of German. (F,SP) Euba

1E. Accelerated Elementary German. (3) Students will receive no credit for 1E after taking 1. Three hours of lecture per week. Prerequisites: Prior exposure to German equivalent to one year of high school German. Formerly 12. Students review and continue to develop the basic elements of communicative competence in both spoken and written language while being sensitized to the links between language and culture. This course covers the same material as 1 in a condensed way and at an accelerated speed. Upon completion of this course, students will qualify for enrollment in 2. (F,SP) Euba

1G. Elementary German for Graduate Students. Five hours of lecture for seven and one-half weeks. Must be taken on a satisfactory/unsatisfactory basis. Prerequisites: One year of prior college level German instruction required. Elementary German for graduate students preparing for reading examinations. (F,SP) Staff

2. Elementary German 2. (5) Five hours of lecture per week. Prerequisites: 1 or equivalent. In this course, students will continue to develop communicative competence in the German language and expand their sensitivity towards the relationship between language and culture. While all language skills will be addressed, additional emphasis will be on the various styles of written and spoken German. (F,SP) Euba

2G. Elementary German for Graduate Students. Five hours of lecture for seven and one-half weeks. Must be taken on a satisfactory/unsatisfactory basis. Prerequisites: 1G. Elementary German for graduates preparing for reading examinations. (F,SP) Staff

3. Intermediate German I. (5) Five hours of lecture per week. Prerequisites: 2 or equivalent. While continuing to expand students’ communicative competence in German, this content-driven course will provide insights into postwar German history and cultural trends. Primary focus will be on the development of literacy skills (critical reading and writing), vocabulary expansion, and a thorough review of structural concepts. You will be guided towards expressing yourself on more abstract topics, such as language and power in society, multiculturalism, rebellion and protest, and social justice, and towards drawing connections between texts and contexts, using a variety of text genres (journalistic, historical, short story, poetry, drama, advertising, film). (F,SP) Euba

4. Intermediate German II. (5) Five hours of lecture per week. Prerequisites: 3 or equivalent. In this fourth-semester German language course you will work on strengthening your interpretative abilities as well as your written and oral communication skills. While continuing the development of communicative competence and literacy skills, students will discuss a variety of texts and films and try to find innovative ways in which to engage with familiar presuppositions about who we are, about what determines our values and actions, and about the function and power of language. (F,SP) Euba

RSA-RSB. Reading and Composition. (4,4) Three hours of lecture per week. Prerequisites: UC Entry Level Writing Placement Exam for 5A. Any A-level course for 5B. Formerly 5A. This course offers a survey of modern German literary, cultural, and intellectual currents, as well as an introduction to the methodology of research and analysis. Students will examine numerous issues and questions central to defining the complexity of modern German culture. RSA satisfies the first half of the Reading and Composition requirement, and RSB satisfies the second half. (F,SP) Staff

10. Elementary German Workshop. (10) Ten hours of lecture/laboratory per week. This accelerated elementary course is conducted entirely in German. All four foreign language skills (reading, writing, speaking, and listening) will be addressed to help students achieve a reasonable level of proficiency in the German language while sensitizing them to the links between language and culture. The workshop includes a weekly film and a conversation table. This workshop combines German 1 and 2 for which students may enroll separately. (F,SP) Staff

12. Accelerated Elementary German. (3) Students will receive no credit for 12 after taking 1. Three hours of lecture per week. Prerequisites: Prior exposure to German equivalent to one year of high school German. Students review and continue to develop the basic elements of communicative competence in both spoken and written language while being sensitized to the links between language and culture. This course covers the same material as 1 in a condensed way and at an accelerated speed. Upon completion of this course, students will qualify for enrollment in 2. (F,SP) Staff

20. Intermediate German Workshop. (10) Ten hours of lecture/laboratory per week. Prerequisites: 1 and 2 or equivalent. New students will qualify for enrollment in 2. (F,SP) Staff

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4. Intermediate German II. (5) Five hours of lecture per week. Prerequisites: 4 or equivalent. Formerly 102A-102B. Intermediate German II covers all four foreign language skills and broadening their understanding of the links between language and culture, this accelerated intermediate course is embedded in the context of German post-war cultural history. A weekly German film and the opportunity to participate in a conversation table complement the workshop. This workshop combines German 3 and 4 for which students may enroll separately. (F,SP) Staff

24. Freshman Seminar. (1) Course may be repeated for credit. Three hours of lecture/discussion per week. Sections 3-4 to be graded on a passed/not passed basis. This Freshman Seminar Program has been designed to provide new students with the opportunity to explore an intellectual topic with a faculty member in a small seminar setting. Freshman seminars are offered in all campus departments, and topics may vary from department to department and from semester to semester. Enrollment limited to 15 freshmen. (F,SP) Staff

39. Freshman Seminar. Course may be repeated for credit. Three hours of lecture/discussion per week. No knowledge of German required. (F,SP) Staff

40. German Conversation. (2) Course may be repeated for credit. Three hours of lecture/discussion per week. Prerequisites: 4 or equivalent. Formerly 102A-102B. Advanced German conversation course that includes discussions, debates, individual presentations, and one or two in-class movies in German. Most materials will be provided by the instructor but students will also be asked to use their own resources from printed or online media. Regular vocabulary quizzes will be part of the course grade. Taught in German. (F,SP) Staff

84. Sophomore Seminar. (1,2) Course may be repeated for credit. Topics vary. One hour of seminar per week. Sections 3-4 to be graded on a passed/not passed basis. Sections 3-4 to be graded on a letter-grade basis. Prerequisites: At discretion of instructor. Sophomore seminars are small interactive courses offered by faculty members in departments all across the campus. Sophomore seminars offer opportunity for close, regular intellectual contact between faculty members and students in the crucial second year. The topics vary from department to department and semester to semester. Enrollment limited to 15 sophomores. (F,SP) Staff

98. Directed Group Study. (1-4) Course may be repeated for credit. Enrollment is restricted; see the Introduction to Courses and Curricula section of this catalog. Hours to be arranged. Must be taken on a pass/no pass basis. Prerequisites: Consent of instructor. Group study of selected topics not covered by regularly scheduled courses. Topics may be initiated by students under the sponsorship and direction of a member of the German Department’s faculty. (F,SP) Staff

99. Supervised Independent Study. (1-4) Course may be repeated for credit. Hours to be arranged. Must be taken on a pass/no pass basis. Prerequisites: Open only to freshmen and sophomores. Consent of instructor. Independent study and research by arrangement with faculty. (F,SP) Staff

Upper Division Courses

100. Introduction to Reading Culture. (3) Three hours of lecture/discussion per week. Prerequisites: Knowledge of German required. The course is intended to acquaint students with selected works from German cultural history and to familiarize them with various methods of interpretation and analysis. Required of all German majors. (F,SP) Staff

101. Advanced German: Conversation, Composition and Style. (3) Three hours of lecture per week. Prerequisites: 4 or equivalent. Focusing on five central themes, this advanced-level language course will help students to improve and expand on spoken and written language functions utilizing a variety of works from different genres in journalism, broadcasting, literature, literature, and the cinema. The final goal is to enable students to participate in the academic discourse—written and spoken—at a linguistic and stylistic level appropriate for an advanced student of German in upper division courses. (F,SP) Euba

102A. Advanced Language Practice: German Performance. (3) Three hours of lecture per week. Prerequisites: 4 or equivalent. Not open to native speakers. Formerly 103. This advanced language/culture course focuses on the structure and practices of German business as well as current economic, political, and cultural issues relevant to conducting business in the German-speaking world. Course work will involve weekly German film and the opportunity to participate in a conversation table complement the workshop. This workshop combines German 3 and 4 for which students may enroll separately. (F,SP) Staff

102B. Advanced Language Practice: German for Business. (3) Three hours of lecture per week. Prerequisites: 4 or equivalent. Not open to native speakers. Formerly 103. This advanced language/culture course focuses on the structure and practices of German business as well as current economic, political, and cultural issues relevant to conducting business in the German-speaking world. Course work will involve weekly German film and the opportunity to participate in a conversation table complement the workshop. This workshop combines German 3 and 4 for which students may enroll separately. (F,SP) Staff

102C. Advanced Language Practice: German for Information Technology and Science. (3) Three hours of lecture per week. The course is designed to help those in the sciences to become acquainted with the basic registers and structures of German scientific texts. It will also serve as an introduction for the students of German to the world of science, which German-speaking scientists have helped create and shape through their research and writing. We will move through a number of major scientific disciplines, developing the tools for vocabu- lary acquisition. Each student will be better able to concentrate within their specialty in order to read, write, and speak within that discipline with a high degree of accuracy and clarity. (F,SP) Toth

102D. Advanced Language Practice: Popular Culture in Germany. (3) Three hours of lecture per week. Focusing on popular culture in German speaking countries, this advanced level language course will help students to improve and expand on spoken and written language functions utilizing a variety of works from different genres in journalism, broadcasting, literature, fine arts, music, and the cinema. Readings, screen- ings, discussions, and writing assignments will advance students’ language skills and further develop their commu nicative competencies in German at a linguistic and stylistic level appropriate for an advanced student. (F,SP) Euba

104. Senior Colloquium. (3) Three hours of lecture per week. Prerequisites: 1 or equivalent. Consent of instructor. Formerly EAP Goettingen welcome. This course is intended for students who wish to improve their skills in reading, speaking, and writing German. We will work with texts that were particularly influential in Germany during the first decades of the 20th century, pages often in a new context of whether when they were written. Segments of philosophical writings (Schopenhauer, Kierkegaard, Nietzsche, lit-
erary works (George, Rilke, Th. Mann) but also texts by scientists and journalists will be analyzed. Participants are expected to prepare several oral presentations on approximately one written assignment per week. No midterm or final examination. (F,SP) Hillen

105. Middle High German for Undergraduates. (3) Open to graduate students when 203 is not offered. Three hours of lecture/translation/discussion per week. Prerequisites: Knowledge of modern German required. Students will learn the fundamentals of Middle High German. The course will lead selections from major narrative works of the High Middle Ages. Selections from major works from the 13th century. (F) Tennant, Largier

C106. Literary Theory and Literature. (3) Three hours of lecture per week. Formerly 106. Exploration of the role that literature can play in the acquisition of literacy in a first and second language. Linguistic and psycholinguistic issues: orality and literacy, discourse text, schema theory, and reading research. Literary issues: stylistics and critical reading, reader response, structure of narratives. Educational issues: the literary text in the social context of its production and reception by intended and non-intended readers. Also listed as Education C145. Kramsch

108. Literary Translation. (3) Three hours of lecture/discussion per week. Prerequisites: Two upper division courses in literary translation. The course introduces students to the problems of literary translation from German to English. (SP) Kudszus

C109. Language and Power. (4) Three hours of lecture and one hour of discussion per week. Formerly 109. Multidisciplinary explorations into the origins, nature, and exercise of language as social, symbolic power, drawing on readings taken from anthropology, social and cultural theory, and critical discourse analysis. Topics include language and myth, the meaning of words in political and legal spheres, and other issues in linguistic theory, such as national, gender, and discourse, and linguistic imperialism. Also listed as Letters and Science C180T. Kramsch

112. Early Modern Literature. (3) Three hours of lecture/discussion per week. Prerequisites: Knowledge of German required. Major texts from the 15th through the 17th century. (F,SP) Tennant, Largier

C113. Western Mysticism: Religion, Art, and Literature. (4) Three hours of lecture and one hour of discussion per week. The course will focus on examples of mystical thought from the traditions of Christian and Jewish mysticism since the Middle Ages. In addition to the introduction of the students to basic texts and concepts we will discuss the effects of mystical thought on art and literature from the Middle Ages up to today. Also listed as Religious Studies C118. (F,SP) Largier

123. From 1800 to the Present. (3) Three hours of lecture/discussion per week. Prerequisites: Knowledge of German required. Major texts from the 19th century and earlier. (F,SP) Hillen

131. Goethe. (3) Three hours of lecture/discussion per week. Prerequisites: Knowledge of German required. An introduction to Goethe’s prose, drama, and poetry. Staff

140. Romanticism. (3) Three hours of lecture/discussion per week. Literature, philosophy, and aesthetics of the Romantic period. Staff

141. German Literature and the French Revolution. (3) Three hours of lecture/discussion per week. Prerequisites: Knowledge of German required. This course will reflect recent attempts to redefine the traditional period of German literature by taking account of the central importance of the German response to the Revolution for the development of Weimar Classicism and early Romanticism. We will also look at the politically charged reception of German Classicism in the 19th century, and at a 19th- and 20th-century literary confrontation with the Revolution (Buechner, Weiss). Wilson

143. Friedrich Nietzsche: The Unintimate Philosopher. (4) Three hours of lecture and one hour of discussion per week. This course introduces students to Nietzsche’s use of confrontations in his major writings. Nietzsche is one of the most challenging and controversial philosophers in the German tradition, but close examination of his major writings in the context of his times should shed new light on what motivated him and why he actually advocated the course will focus not only on philosophical problems that surface in his writings, but also on cultural, social, and political issues that Nietzsche frequently discusses. (F,SP) Holub

146. Topics in Narrative. (9) Course may be repeated for credit as topic varies. Three hours of lecture/discussion per week. Analysis of German narrative forms. Topic varies. (F,SP) Staff

151. 18th- to 20th-Century German Poetry. (3) Three hours of lecture/discussion per week. Prerequisites: Knowledge of German required. Representative texts from 18th- to 20th-century German poetry will be studied closely. Methodological questions regarding the interpretation of poetry in general will also be discussed. Staff

152. Modern Literature. (3) Three hours of lecture/discussion per week. Introduction to philosophical, ideological, and aesthetic trends at the turn of the century. Three hours of lecture by Th. Mann, F. Kafka, S. George, R. M. Rilke, G. Benn, B. Brecht. Staff


155. Kafka and Modernism. (3) Three hours of lecture/discussion per week. A careful study of Kafka’s writings that will examine their social, historical, and cultural contexts and will focus on a number of significantly different interpretive approaches to his works. Staff

157. German Intellectual History in a European Context: Historical Figures and Contemporary Reflections. Three hours of lecture and one hour of discussion per week. (F,SP) Holub

157A. Luther, Kant, Hegel. (4) Introduction to the intellectual history of Germany from the age of the Reformation to the period of Idealism. We will focus on three major thinkers—Martin Luther, Immanuel Kant, and G.W.F. Hegel—on key issues in their thought, and on the relevance of some of these issues in 20th-century theory. Lectures and readings in English. (F,SP) Staff

157B. Marx, Nietzsche, Freud. (4) Formerly 157. The aim of the course is to explore the central theoretical and philosophical premises of three of the most influential thinkers in the German-speaking world and to examine in detail several works in which problems of history, ideology, values, and methodology are considered. Lecture and readings in English. (F,SP) Staff

157C. Marx, Nietzsche, Freud. (4) Students will receive no credit for C157B after taking 157B. Three hours of lecture and one hour of discussion per week. The aim of the course is to explore the central theoretical and philosophical premises of three of the most influential thinkers in the German-speaking world and to examine in detail several works in which problems of history, ideology, values, and methodology are considered. Lecture and readings in English. Also listed as Letters and Science C140T. (F,SP) Holub

157C. Heidegger and Arendt. (4) This course is an introduction to the work of Martin Heidegger and Hannah Arendt. We will begin with an investigation into Heidegger’s conceptualization of language, time, and human dwelling. We will then move to an examination of Arendt’s political philosophy, including her focus on the public/private distinction. Taught in English. (F,SP)

157D. Adorno, Benjamin, Habermas. (4) This course examines the writings of the Frankfurt School of Critical Theory, a major branch of western Marxism. Focus will be on Frege, Derrida, and Foucault. Lectures will deal with three seminal thinkers: Walter Benjamin, known for his genial insights into the culture of modernism; Theodor Adorno, the versatile philosopher and sociologist of his generation, and Jurgen Habermas, the most influential German intellectual after World War II. (F,SP)

160. Politics and Culture in 20th-Century Germany. Three hours of lecture/discussion per week; plus additional film screenings. Lectures and readings in English. (F,SP) Staff

160A. Century of Extremes. (4) Formerly 150. The aim of this course is to examine a 20th century in which two world wars, genocide, Allied occupation, a division into two states on opposing sides of the Cold War, and recently an unexpected unification. This course offers an introduction to the history and culture of contemporary Germany. It aims at a systematic account of German history in the 20th century, and it intends to provide a better understanding of today’s German culture and politics. In addition to following a chronological approach, we will frequently stop to explore issues that are crucial to providing insights into current developments.

160B. Fascism and Propaganda. (4) This course will focus on the theory and practice of propaganda during the 12 years of the Third Reich. This course looks at the ideology the Nazis tried to transmit, the techniques, organization, and effectiveness of their propaganda. Challenging the idea of the total power of propaganda, we will look for the limits of its potential and possible other reasons for which Germans might have decided to follow Hitler. Sources will include the press, radio, film, photography, political posters, and other literary works of the time.

160C. East Germany: Politics and Culture. (4) This course will deal with cultural developments in East Germany (1949-1989), including the time period just before the establishment of the German democratic Republic from 1945-1949, and the period immediately after the unification of Germany in 1990. We will deal primarily with literature and film, but also consider issues of cultural politics and theory. (F,SP)

160D. Multicultural Germany. (4) This course will deal with the culture and politics of minorities in contemporary Germany. We will discuss how ethnic identities are constructed, reconstructed, and marketed. We also engage critically with such concepts as migration, assimilation, citizenship, diaspora, hybridity, and authenticity, as well as rhetorical strategies of “speaking back.” We will focus on representative works from Germany, but include comparisons with minority experiences in other countries. (F,SP)

163. “Vaatertiliteratur”: The Quest for Identity. (3) Three hours of lecture/discussion per week. Prerequisites: Knowledge of German required. Studies in the discourse of memory and historical identity, with emphasis on literary texts written around 1980 in which sons and daughters explore and question their father’s writing. Taught in English. (F,SP) Seeba

166. Gender Perspectives in Literature. (3) Course may be repeated for credit as topic varies. Three hours of lecture/discussion per week. This course offers an introduction to thematic and theoretical issues of gender and sexuality in German literature. Course materials may include literary texts, films, and other works of visual and material culture. The focus will be on developing skills for critical analysis using gender and feminist theories. All readings in English. (F,SP) Staff

167. Cultural Criticism. (3) Three hours of lecture/discussion per week. Prerequisites: Knowledge of German required. The cultural criticism of Friedrich Nietzsche, Sigmund Freud, and Hannah Arendt will be the main focus. The implications of their writings by such authors as Thomas Mann, Franz Kafka, Else Lasker-Schuler, and Thomas Bernhard will be considered. Notions of the subconscious, identity formation, and
170. History of the German Language. (3) Three hours of lecture/discussion per week. Designed for under-graduate and graduate students interested in the history of a second language or the newly-merged Germany, in which transverses a rich linguistic legacy from the *Lay of Hildebrand*, through Luther and Grimm, to Grass and *Der Spiegel*. Discussion, via linguistic principles, of language genetic development in the German language, as well as its interchange over time with closely and remotely related languages such as English and Russian. (F) Rauch

173. The Phonetics and Phonology of Modern Ger-man. (3) Three hours of lecture/discussion per week. A course designed for undergraduates and graduates on the phonetics and phonology of modern German, covering the fundamentals of German phonetics and phonology, with comparison to English. Some discussion of German dialect phonology. (F,SP) Shannon

174. The Morphology and Syntax of Modern Ger-man. (3) Three hours of lecture/discussion per week. A course designed for undergraduates and graduates on the grammar of modern German acquiring the fundamentals of German morphology, syntax and semantics, with comparison to English. (F,SP) Rauch

175. Undergraduate Seminars. Three hours of sem-inar per week. Prerequisites: 100.

175B. 20th-Century Poetry. (3) Analysis of various poetry from the beginning of the century to today, including works by Trakl, Benn, Bachmann, Sachs, Celan, and Brinkmann. A 20-page research paper will be part of the requirements for this course. Kudszus

176. German Cultural History in a European Con-text. (4) Three hours of lecture/discussion per week. Three hours of seminar and one hour of tutorial per week. See departmental announcement for offerings. Additional screening time may be required for film topics. (F,SP) Staff

179. Special Topics in German. (3) Course may be repeated for credit. Three hours of lecture/discussion per week. This course will be taught on the content which will change from semester to semester. It will examine major topics, concepts, and theories pertaining to the cultural identity of western Europe, selected around a specific theme. Special attention will be paid to the cultural his-tory of Germany and its influence on other countries. Possible themes range from the concepts of the self, God, history, and art, to the history of emotions and sexuality, the people and the masses, social upo-nation, etc. (F,SP) Staff

C179. Special Topics in German. (3) Course may be repeated for credit as topic varies. Three hours of lect-ure/discussion per week. Prerequisites: Open to any foreign language student. Issues in bilingualism for stu-dents of foreign languages. This course explores what research on bilingualism says about what it means to learn someone else’s language—the cognitive, affective, and linguistic aspects of second language acqui-sition, the relation of language and culture, and lan-guage and identity. Fieldwork will include observing, recording, and transcribing segments of foreign lan-guage classroom interaction in bilingual schools, area, and interviews with native speakers of various languages on campus. Course taught in English, open to any foreign language student, data collected in the languages of the participants. Also listed as Spanish C179. (SP) Staff

182. German Cinema in Exile, (4) The course will deal with the topic from various angles: a representa-tive selection of American films noirs from the United States and some films (as forrunners) from the Weimar Republic will be shown. The course will be run in terms of their visual and narratives. There will also be li-terary texts and cultural documents (articles on crime in the United States; on the working conditions in Hol-lywood) pertaining to the topic. Films have English sub-titles. (SP) Kaes

186. Transnational Cinemas. (4) Three hours of lecture/discussion per week, plus weekly film screenings. This course will explore how experiences of migration, diaspora, or exile are visualized in cinema, and how processes of internationalization in film production and distribution intersect with the projection of a transna-tional global imagery. Some examples of transnational cinema will be analyzed in historical perspective as well as contemporary examples of “migrant cinema.” We will investigate how these films engage with debates about multiculturalism and assimila-tion/segregation of minorities, as scenarios of identity and mobility are often intertwined with repre-sentations of ethnicity and gender. (F,SP) Gokturk

187. Comedy and Community. (4) Three hours of seminar per week, plus weekly film screenings. Prerequisites: Knowledge of German required. Comedy may be read as crucial texts in understanding how communities are forged and how group identities are constructed through strategies of inclusion and exclusion. Many comedies employ outsiders, immi-grants, or underdogs to present and unsettle a society and its norms through defamiliarizing eyes. Following the work of major theorists of jokes, humor, and nar-cival (Bergson, Freud, Bakhtin, Douglas, and others), we will analyze how revolution and control, anarchy and containment, aggression and laughter are closely interrelated in comedy. (F,SP) Gokturk

188. German Kabarett. (3) Three hours of lecture/discus-sion per week for 11 weeks, plus one week of in- tense daily rehearsals and weekend performances. Prerequisites: 4 or equivalent, or consent of instructor. This course is to provide students with the ability to read German philosophical texts with understanding. (SP) Staff

H196. Honors Studies in German. (2-4) Prerequi-sites: One of the 195 courses. Supervised independent study and research course for honor students who are writing their theses for completion of the requirements for the Honors Program. (F,SP) Staff

H196A-H196B. Honors Studies in German. (2) Students will receive no credit for H196A-H196B after taking H196. Individual meetings to be arranged with thesis advisor. Credit and grade to be awarded on completion of sequence. Prerequisites: Consent of faculty advisor. H196A and H196B are two-semester supervised independent study and research course in which honor students research their theses topic the first semester (H196A) and write their theses the second semester (H196B) for completion of the re-quirements for the honors program. (F,SP) Staff

198. Directed Group Study. (2-4) Course may be re-peted for credit. Must be taken on a passed/not passed basis. Group study of selected topics which will vary from year to year. (F,SP) Staff

199. Supervised Independent Study and Research. (1,2) Individual conference. Must be taken on a passed/not passed basis. Prerequisites: Open to stu-dents who have completed at least 15 units of upper division German with an average no less than B. Su- pervised independent study and research. (F,SP) Staff

Graduate Courses in Literature

Introductory

200. Proseminar in German Literature. (4) Two hours of seminar and one hour of tutorial per week. Prerequisites: 106 or 203. (F,SP) Tenant, Lager

201. Major Periods in German Literature. Three hours of lecture/discussion per week. Designed ex-pressly for M.A. candidates. Final exam, no paper.

201A. Literature of the Middle Ages. (4) Survey of me-dieval German literature that concentrates on monu-ments of the Hohenstaufen period but also includes representative works from the later 13th, 14th and 15th cen-turies. Intended for M.A. candidates but open to all students with a working knowledge of Middle High German. Tenant, Lager

201B. 16th and 17th Century. (4) Recommended for M.A. candidates. (F) Tenant, Lager

201C. 18th Century. (4) An introduction to major works of late Enlightenment, Sturm and Drang, and Classi-cism to Schiller’s death. Staff

201D. 19th Century. (4) A study of major texts from Novalis to Fontane to explore the changing functions of literature, its ideological implications and social significance within 19th-century German thought. (SP) Seeba

201E. 20th Century. (4) A critical overview of major lit-erary and intellectual currents between the initial and the final turn of the century. We will explore literary, so-ciocultural, and philosophical forces in their conse-quential interactions. Considerations will include Freud, Dada, Expressionism, National Socialism, Exile, post-World War II literary, countercultural texts, and post-modernism. Kaes

202. Stilistikum. (2) Two hours of lecture per week. Must be taken on a satisfactory/unsatisfactory basis. This course is suggested as an introduction to the stylistics of critical writing and is designed for graduate students who want to improve their writing skills and their oral performance in German. Some exercises will be devoted to academic presentations. (F,SP) Raehse-Weber

203. Readings in German Philosophy. (2) Course may be repeated for credit. Two hours of lecture per week. Prerequisites: One year reading knowledge of German. A study of German as a language of philo-sophical thought and discourse. The course will involve close readings of representative works from the Ger-man philosophical tradition, with special attention paid to issues of language and translation. The goal of the course is to provide students with the ability to read German philosophical texts with understanding. (SP) Staff

204. Compact Seminar. (2) Course may be repeated for credit. Two hours of seminar for four weeks. A com- pact seminar designed to feature distinguished short-term visitors from German-speaking countries who will provide intensive intensive in-person instruction and discussion to teach topics that complement regular departmental of-ferings. One short paper is required. Taught in Ger-man. (F,SP) Staff

Literary History

205. Studies in Medieval Literature. (4) Two hours of seminar and one hour of tutorial per week. Prerequi-sites: 106 or 203. (F,SP) Tenant, Lager

206. Studies in the Early Modern. (4) Two hours of seminar per week. Survey of texts from the 15th and 16th centuries. A good reading knowledge of Middle High German is recommended. Tennant, Lager

208. Studies in the 17th Century. (4) Two hours of seminar per week. A study of a series of topics dealing with genres, authors, or themes. Whatever the topic, the high points of the century will be treated. Staff

210. Studies in the 18th Century. Two hours of sem-inar and one hour of tutorial per week. Staff

210A. Age of Enlightenment. (4) Formerly 211A. Lit-erary texts will be studied as historical documents il-luminating changes in literary theory and in religious and philosophical thought during the Enlightenment. Texts by Lessing, Herder, and Lenz, and some Storm and Stress plays.

212. Studies in the 19th Century. Two hours of sem-inar and one hour of tutorial per week. Staff
212A. Topics in Romanticism. (4) Course may be repeated for credit. Major authors and texts of the romantic period will be discussed. (F) Staff

214. Studies in the 20th Century. (4) Course may be repeated for credit as topic varies. Two hours of seminar per week. Staff

Author

234. Goethe. Three hours of seminar per week.

234A. Early Goethe. (4) Concentration on the works of Goethe's Sämmtliche Werke Drang period and Faust I. Various interpretations of the major works of the author will be examined in the course of research in this period. (F,SP) Weisinger

252. Nietzsche. (4) Two hours of seminar per week. The aim of the course is to explore a few of Nietzsche's most important texts and to examine the variety of ways he has been read, especially during the past two decades or so. Holub

Theory

255. Interpretation and Criticism of Poetry. (4) Three hours of seminar per week. (F) Kudszus

256. Problems of Literary Theory. (4) Course may be repeated for credit. Two hours of seminar and one hour of tutorial per week. Topics vary from year to year. For current topic see the department's "Course Descriptions" booklet. Staff

258. Linguistic Approaches in Literature. (4) Three hours of lecture per week. Introduction to basic styles of stylistics, poetic, and literary discourse analysis. Principles of literary interpretation based on the linguistic features of texts and their reception by native and non-native readers. From students' close readings of German literary texts of prose, poetry, and plays. Topics include deixis, face-work, focalization, indexicality, intertextuality, metaphor, performative, point of view, rhythm, and sound. Shaffer

263. Studies in Language. Three hours of seminar per week.

263A. The Process of Translating. (4) Questions of interpretation, writing and intertextuality will be explored in connection with translating a 20th-century literary work. Kudszus

263C. Poetry and Thought. (4) Three hours of seminar per week. Prerequisites: Previous work with German poetry and philosophy. This seminar examines the interrelationship of poetic and philosophical discourses, with an emphasis on roles and functions of language. Quaestiones perpugilantia in the context of style and writing will interrelate different genres of poetry and thought. The seminar will explore a tradition in which poetic thought and highly reflective poetry approach and at times merge with each other. (F,SP) Katz

265. Film Theory: Historical and Systematic Perspectives. (4) Two hours of lecture/discussion plus one hour of tutorial per week. Prerequisites: 200 or equivalent. Formerly 260C. This seminar will examine traditional and recent critical approaches to the study of film. Knowledge of German and background in literary theory required. (SP) Kaes

268. Aspects of Literary and Cultural History. (4) Three hours of seminar per week. A comparison of literary and cultural developments in Germany and the United States. Emphasis is placed on individual research designed to develop teaching materials. Staff

Graduate Courses in Linguistics

271. Comparative Germanic. (4) Three hours of seminar per week. Advanced topics in Germanic phonology, morphology, syntax, semantics, pragmatics. The principal Germanic dialects viewed within theary theory and reconstruction. (SP) Rauch

273. Gothic. (4) Three hours of lecture/discussion per week. Study of the linguistic structures of the earliest Germanic dialect with a sizable corpus. Indo-European origins, Germanic relationships, and Gothic as a synchronic construct are considered. (F) Rauch

276. Old High German. (4) Three hours of lecture per week. Reading of poetic and prose texts in Old High German. The synchronic and diachronic study of the dialects of the High German language from the eighth to the eleventh century within the framework of current linguistic method. Rauch

278. History of the Dutch Language. (4) Two hours of seminar per week. Lecture course on the historical development of Dutch. The theoretical and practical exploration of recent developments in second language teaching concentrates on instructional technology, teaching writing, teaching literary texts, and curriculum design. Students reflect on their development as teachers through a journal, video, and observations of their teaching, and the final portfolio. (SP) Staff

Courses in the Teaching of German

350. Seminar in Foreign Language Pedagogy: Teaching College German I. (3) Three hours of seminar per week. Must be taken on a satisfactory/unsatisfactory basis. Prerequisites: Graduate standing. The course focuses on the theory and practice of foreign language pedagogy. It introduces students to second language acquisition research and its relationship to pedagogy, providing a basis for staying theoretically informed and for participating in professional discourse of the field throughout one's teaching career. It also emphasizes critical reflection on pedagogical practices. Includes a practical component dealing directly with the day-to-day challenges of teaching elementary German. (F) Staff

351. Seminar in Foreign Language Pedagogy: Teaching College German II. (3) Three hours of seminar per week. Must be taken on a satisfactory/unsatisfactory basis. Prerequisites: Graduate standing. This course expands upon the basis of methodology and theory of language teaching covered in 350 and prepares students for teaching at the intermediate level. The theoretical and practical exploration of recent developments in second language teaching concentrates on instructional technology, teaching writing, teaching literary texts, and curriculum design. Students reflect on their development as teachers through a journal, video, and observations of their teaching, and the final portfolio. (SP) Staff

Yiddish

Upper Division Courses

101. Elementary Yiddish. (5) Five hours of lecture/discussion per week. Introduction to Yiddish language and literature. Attention to reading, writing, and speaking in the context of the historic Yiddish cultural environment. (F)

102. Intermediate Yiddish. (5) Students will receive no credit for 2 after taking 102. Five hours of lecture/discussion per week. Prerequisites: 101 or equivalent. Further intensive study of Yiddish, building on the foundation established in 101. Advanced grammar and introduction to the reading of original texts. (SP) Katz

103. Readings in Yiddish. (3) Course may be repeated for credit when readings change. Three hours of lecture/discussion per week. Prerequisites: 102 or equivalent, or consent of instructor. Study of selected Yiddish texts including prose, poetry, and drama, from various periods and geographic areas, in the context of time and place. Review of relevant grammatical topics. Increased attention to the Hebrew/Aramaic component. Selections may vary from semester to semester. (SP) Katz

Dutch

Lower Division Courses

1. Elementary Dutch. (5) Five hours of lecture and one hour of laboratory per week. Beginner's course. (F) Van Deuse-Scholl
2. Elementary Dutch. (5) Five hours of lecture and one hour of laboratory per week. Prerequisites: 1 or equivalent. (SP) Van Deusen-Scholl

Upper Division Courses

107. The Structure of Modern Dutch. (3) Three hours of lecture per week. A basic course on the structural properties of modern Dutch, including phonetics and phonology, morphology, and syntax. Comparison with English and German. (F) Staff

110. Advanced Dutch. (4) Three hours of lecture and one hour of discussion per week. Prerequisites: 2 or equivalent. Review of Dutch grammar, written exercises, and an introduction to Dutch literature. (F) Staff

125. Conversation and Composition. (4) Course may be repeated once for credit. Three hours of lecture and one hour of discussion per week. Prerequisites: 110 or consent of instructor. This course is designed to improve both the oral and written style of the student in Dutch, employing a variety of sources ranging from the newspaper to the essay to the creative forms (poetry, short story). The art of correspondence, both formal and informal, will be taught as well as the widely-varying spoken styles. (SP) Staff

C164. The Indonesian Connection: Dutch Literature About the Indies in English Translation. (4) Three hours of lecture and one hour of discussion per week. In postcolonial thought on European claims to cultural supremacy, the case of the “Dutch East-Indies” (the future Indonesia) still arouses questions like: What made the Dutch colonial policy different? What other European powers? What were the main characteristics of the “Dutch East-Indies”? How did a small country like the Netherlands manage to rule a territory that was fifty-two times its own in scale? And how can we explain that 350 years of Dutch domination left so few traces in contemporary Indonesia? Also listed as Southeast Asian C164. (F,SP) Staff

166. Anne Frank and After: Dutch Literature of the Holocaust in English Translation. (4) Three hours of lecture and one hour of consultation per week. Post-War Dutch literature is replete with works dealing with the Holocaust, by both victims and survivors. The course will focus on literary as well as historical documents, examine the history of anti-Semitism in the Netherlands and Belgium, through reading, audios, visual materials, the World Wide Web, guest lectures, and discussions, we will cover the major social, political, and cultural aspects of modern Dutch society. The course is organized around five larger themes: (1) formal and informal, will be taught as well as the widely-varying spoken styles. (F,SP) Staff

170. Dutch Culture and Society. (3) Three hours of lecture/discussion per week. The course will focus on the culture of the Low Countries, including both the Netherlands and Belgium. Through reading, audiovisual materials, the World Wide Web, guest lectures, and discussions, we will cover the major social, political, and cultural aspects of modern Dutch society. The course is organized around five larger themes: (1) formal and informal, will be taught as well as the widely-varying spoken styles. (F,SP) Staff

179. Cultural Studies. (3.4) Three hours of lecture/discussion per week. One additional hour of discussion per week, depending on the topic. Selected topics in cultural studies. Offerings vary. See departmental descriptions for current topic. All readings and discussions in English. (F,SP) Staff

C179. The Jews of the Low Countries. (3) Three hours of lecture per week. A history of Jewish communities in the Netherlands from early Middle Ages until today. Reflection upon relationships between Catholic or Protestant majorities and the Jewish minority, and between Sephardic and German Jews in Amsterdam. Emancipation of the Jews in the Dutch Republic and the kingdom of Belgium. Mechanism of the Judaeocide (Shoah) in both countries and a survey of present-day Jewish life, stressing diversity from Reform Judaism to strict Orthodox and vibrant Chasidic communities in Antwerp. Also listed as Jewish Studies C179. (F,SP) Albicht

190. Senior Thesis. (4) One 2-hour consultation per week. A major research paper in the areas of Dutch literature, culture, or the area of linguistics. Required of all majors. (F,SP) Staff

H196. Honors Studies in Dutch. (1-4) Course may be repeated for a maximum of 4 units. Prerequisites: Advanced standing. Supervised independent study and research course for honors students. (F,SP) Staff

198. Directed Group Study. (1-4) Course may be repeated for credit. One to four hours of directed group study per week. Must be taken on a passed/not passed basis. (F,SP) Staff

199. Special Studies in Dutch. (1-4) Course may be repeated for credit. Individual course. Must be taken on a passed/not passed basis. Prerequisites: General O.G.P.A. of 3.0. Enrollment is restricted by regulations in the General Catalog. (F,SP) Staff

Graduate Courses

250. Graduate Seminar in Cultural Studies. (4) Three hours of seminar per week. Research seminar on selected topics in cultural studies. Offerings vary. See department course descriptions for current topics. (F,SP) Van Alphen

260. The Culture of Trauma. (4) Three hours of seminar per week. The course will focus on issues of trauma and cultural memory and the ways they manifest themselves in representation. This dual question is primarily of a theoretical nature. Moreover, we will ask why in present culture there is so much interest in trauma and memory. This is a cultural-historical question. Much of the course will be devoted to practicing techniques of reading for traces of trauma and other subtle indications of an unspoken “pastness,” paired with a sensitivity to non-documentary forms of expression, will be practiced in readings of works by writers and visual artists. (F,SP) Van Alphen

299. Individual Studies in Dutch for Graduate Students. (1-8) Course may be repeated for credit. Individual course. For graduate students engaged in exploration of a restricted field, involving the writing of a research paper. (F,SP) Staff

Health and Medical Sciences Program (Graduate School of Public Health)

Program Office: 570 University Hall, (510) 642-5479 jmp.berkeley.edu
Director: John Swartzberg, M.D.
Associate Professor Jodi Halpern, M.D., Ph.D.
Director and Clinical Professor John Swartzberg, M.D.
Associate Director and Clinical Professor Ann Stevens, M.D.
Clinical Professors Guy McCoo, M.D.
Kent Olson, M.D.
Alan Steinbach, Ph.D., M.D.
Harvey Weinstein, M.D., M.P.H.
Associate Clinical Professors Jeffrey Burack, B.Ph., M.D., M.P.P.
Howard Grabo, M.D.
Claudia Landau, M.D., Ph.D.
Bary Lamer, M.D.
Balaram Pugilgandla, M.D.
Karen Sokal-Gutierrez, M.D., M.P.H.
Assistant Clinical Professors John Campagna, M.D.
Mario Corona, M.D.
Robert Friedman, M.D.
Kenneth Jehle, M.D.
Bowen Wong, M.D.
Academic Coordinator Kevin Mack, M.D.
Lecturers
Amin Azzam, M.D.
Jennifer Breckler, Ph.D.
Hana Dan-Cohen, Ph.D.
Erik Gaensler, M.D.
Sara Hartley, M.D.
Associate Adjunct Professor Susan Ivey, M.D., M.H.S.A.
Assistant Adjunct Professor Colette Auerwald, M.S., M.D.

Adjunct Professor Eric Stover, M.D.

Program Overview

UC Berkeley-UC San Francisco Joint Medical Program. A five-year program leading to the M.S. in Health and Medical Sciences from UC Berkeley and the M.D. from UC San Francisco. The program’s mission is to produce academic and community leaders in American medicine through an early exposure to public health disciplines, the medical humanities, bioethics, and the social and behavioral sciences. Berkeley awards the master’s degree upon the successful completion of the first three years of work and UC San Francisco awards the medical degree after successful completion of the fourth and fifth years. The master’s program is coordinated with a case-based preclinical science curriculum during the first three years and requires a minimum of 20 additional units of academic coursework and a thesis. Students are expected to acquire a scholarly expertise with a selected area of interest related to health and mastery of the preclinical sciences. Students selected for this program must meet the rigorous academic requirements for entrance into medical school. The selection process screens for students who have a strong interest in the determinants of human health and disease beyond the purely medical and who seek a collaborative small group process model for learning.

Admissions. Applicants to the Joint Medical Program must be eligible for admission to the University in graduate standing, with an undergraduate upper division grade-point average of at least 3.0, along with a bachelor’s degree from an accredited college or university. They must have fulfilled the standard premedical requirements and have taken the Medical College Admission Test. Admission is coordinated with the School of Medicine at UC San Francisco.

For more detailed information about the Joint Medical Program, call (510) 642-5671 or go to jmp.berkeley.edu.

Lower Division Courses

84. Sophomore Seminar. (1,2) Course may be repeated for credit as topic varies. One hour of seminar per week per unit for 15 weeks. One and one-half hours of seminar per week per unit for 10 weeks. Two hours of seminar per week per unit for eight weeks. Three hours of seminar per week per unit for five weeks. Sections 1-2 to be graded on a passed/not passed basis. Sections 3-4 to be graded on a letter-grade basis. Prerequisites: At discretion of instructor.

Sophomore seminars are small interactive courses offered by faculty members in departments all across the campus. Sophomore seminars offer opportunity for close, regular intellectual contact between faculty members and students in the crucial second year. The topics vary from department to department and semester to semester. Enrollment limited to 15 sophomores. (F,SP)

98. Directed Group Study. (1-3) Course may be repeated for credit. Three to nine hours of group study (or tutorial or fieldwork) per week. Must be taken on a passed/not passed basis. Prerequisites: Consent of instructor; freshman/sophomore status. Organized group study on topics selected by Health and Medical Sciences faculty for freshman/sophomore students. (F,SP) Staff
Upper Division Courses

C133. Death, Dying, and Modern Medicine: Historical and Contemporary Perspectives. (4) Three hours of lecture and two hours of discussion per week. This course will study the end of life—dying and death—within the context of modern medicine and medical ethics. It seeks to confront the humanist with the quotidian dilemmas of modern clinical practice and medicine’s deep engagement with death more generally. It invites professional and public students to consider the ways in which medicine has become medical, where aging, death, and dying are involved. It will seek to understand these matters in light of the historical and, more broadly, literary and artistic perspectives of the humanities. Also listed as Undergrad Interdisciplinary Studies C133 and History C191. (SP) Lague, Mccoo

150. Introduction to Aging Issues and Opportunities. (2) Two hours of lecture per week. Prerequisites: Upper division or graduate standing or consent of instructor. This course will explore current issues in aging from biological, demographic, psychosocial, family, community, and policy perspectives. To begin, lectures will focus on the aging of the general population of which older adults are becoming a larger and larger percentage; How men and women age differently; The historical context within which aging has been viewed; The physical and mental changes that occur over time. These initial lectures will provide the foundation for the lectures that follow in which professionals present issues—unique to their field or general issues impacting the needs of their elderly clientele. Representative professionals will include law, medicine, dentistry, architecture, social welfare, optometry, speech and physical therapy. The importance of understanding the interplay of biology and psychology in aging will be emphasized as speakers highlight pertinent issues in this population through case study scenarios. By using case studies we will shift the focus from “the disease” to “the person.” Students will discuss how they became interested in their respective professions and what opportunities/challenges await a new generation of professionals. (F) Mccoo, Rothman

190. Special Topics in Health and Medical Sciences. (1-4) Course may be repeated for credit as topic varies. One to three hours of lecture per week. Prerequisites: Upper division or graduate standing or consent of the instructor. Special topics in health and medical sciences of concern to the instructor and intended to address emergent topics that fall outside of or are more restricted in content than the regular curriculum. An opportunity to investigate compelling topics on an ad hoc basis from the perspective of health and medical sciences for advanced undergraduates and graduates in health-related disciplines; open to others as space permits. For topics, see online schedule of classes. (F,SP)

197. Field Study in Health and Medical Sciences. (1-3) Course may be repeated for credit. Three to nine hours of lecture per week. Must be taken on a satisfactory/unsatisfactory basis. Prerequisites: Upper division or graduate standing or consent of instructor. Field experience relevant to health and medical sciences. Regular individual and/or group meetings with faculty supervisor are required. A final written report or ongoing field notebook is required. One unit of credit represents three hours of work per week on the part of the student. (F,SP) Staff

198. Directed Group Study. (1-3) Course may be repeated for credit. One to three hours of directed group study. May be taken on a satisfactory/unsatisfactory basis. Prerequisites: Upper division or graduate standing or consent of a member of the faculty. (SP) Steinbach, Swartzberg

Graduate Courses

200. Contextual Integrated Case-Based Curriculum. Ten and one-half hours of seminar per week. Prerequisites: C133, C292, C293. Prerequisites: Graduate standing in Health and Medical Sciences Joint Medical Program. The six semester sequence (200A-200F) introducing principles of the medical basic science, health policy, public health, and clinical aspects of medicine taught in a context integrated curriculum. The sequence includes curriculum in biochemistry, histology, microbiology, immunology, neuroanatomy, pathology, physiology, pharmacology, and clinical sciences. (F,SP) Swartzberg, Staff

202A. Clinical Skills 1. (2) Two hours of seminar per week. Must be taken on a satisfactory/unsatisfactory basis. Prerequisites: Graduate standing in Health and Medical Sciences Joint Medical Program. Students learn the cardiovascular, pulmonary, eye, and gastrointestinal exam and practice a complete medical history and physical exam with their preceptor. The dynamics of the physician-patient relationship are discussed on an ongoing basis with both the preceptor and the faculty instructor. Each student is required to turn in at least five patient write-ups per term. (F) Mccoo

202B. Clinical Skills 2. (3) Three hours of lecture/lab- oratory offered alternate weeks. Must be taken on a satisfactory/unsatisfactory basis. Prerequisites: Graduate standing in HMS Joint Medical Program. Students learn the neurologic, musculo-skeletal, ear, nose, throat, and skin exams and practice the medical history and physical exam with their preceptor. The dynamics of the physician-patient relationship are discussed on an ongoing basis. Each student is required to turn in at least five patient write-ups per term. (F) Stevens, Swartzberg

202D. Clinical Skills 4. (2) Three hours of lecture/lab- oratory offered alternate weeks. Must be taken on a satisfactory/unsatisfactory basis. Prerequisites: Graduate standing in HMS Joint Medical Program. Students learn the male genito-urinary exam and practice the complete medical history and physical exam with their preceptor. The dynamics of the physician-patient relationship are discussed on an ongoing basis. Each student is required to turn in at least five patient write-ups per term. (F) Stevens, Swartzberg

202E. Clinical Skills 5. (2) Three hours of lecture/lab- oratory offered alternate weeks. Must be taken on a satisfactory/unsatisfactory basis. Prerequisites: Graduate standing in HMS Joint Medical Program. Students learn the gynecologic exam and practice the complete medical history and physical exam with their preceptor. The dynamics of the physician-patient relationship are discussed on an ongoing basis. Each student is required to turn in at least five patient write-ups per term. (F) Stevens, Swartzberg

202F. Clinical Skills 6. (1) Three hours of lecture/lab- oratory per week. Must be taken on a satisfactory/unsatisfactory basis. Prerequisites: Graduate standing in HMS Joint Medical Program. Under supervision, students perform a complete history and physical exam on hospitalized or clinic patients five times during the semester. They present the patients in written and verbal format to the instructor and class. These presentations are critiqued and the tools to effectively present cases are taught. The course runs for the first half of the student’s last semester in the program. Each student is required to turn in three patient write-ups. (SP) Stevens, Swartzberg

210. Readers’ Theater—Topics in Medicine in Society. (1) Course may be repeated for credit as topic varies. Three hours of seminar per week for eight weeks. Prerequisites: Graduate standing or consent of instructor. In readers’ theater, texts not written explicitly for the stage are adapted for public performances. Students are assigned a book by performing the performance of relevant literature and discourse with involved audiences. In this course, selected stories deal with many aspects of medicine in context, e.g. dying, childbirth, aging, living with chronic pain, biomed- ical ethics, and the artistry of medicine. All presentations are presented to audiences such as elders, caregivers, pa- tients, and providers. (SP) Mccoo

211. Narrative and Medicine. (1) Course may be repeated for credit as topic varies. One hour of seminar per week. Prerequisites: Graduate standing in Health and Medical Sciences Joint Medical Program. This course’s goal is to provide a method for medical students to think, write about, and discuss feelings engendered by clinical encounters. Medical students are taught the need to be emotionally detached from patients, yet being emotionally detached does not mean devoid of emotion. This course offers a means to express and analyze those feelings. Also considered is the role of regarding the medical history as “text” which can be written and read from differing, equally valid viewpoints. (F,SP) Mccoo

240. The Death Course. (2) Two hours of seminar per week. Prerequisites: Graduate standing or consent of instructor. This course is intended for medical and graduate students who have an interest in the problem of death. The topic will be explored from vari- ous religious, cultural, and personal perspectives through the use of literature, in-class writing and dis- cussion, and occasionally film and music. A 10-15 page paper will be required. (SP) Mccoo

261. Thesis Seminar. (1-2) Two hours of seminar per week. Prerequisites: Graduate standing in Health and Medical Sciences UCB-UCSF Joint Medical Program. A seminar to help Joint Medical Program students acquire research and presentation skills necessary to write a thesis. Find appropriate mentor, and design a research project. Summer course introduces research design, methods, and expectations for M.S. research in Health and Medical Sciences. Graduates and/or interns address topics in research; student progress toward M.S. thesis is reviewed and critiqued. Development of research plan, protocol design and implementation, and research findings will be reviewed. Each student will take this course three times in the first year. (F,SP) Auerswald

296. Special Study. (1-10) Course may be repeated for credit. Individual meetings with faculty members. Must be taken on a satisfactory/unsatisfactory basis. Prerequisites: Graduate standing in Health and Medical Sciences Program or consent of instructor. Special study topics for advanced graduate students who share a keen interest in the field. Sections 9-17 may be taken for a grade with department approval. Prerequisites: Graduate standing in Health and Medical Sciences Program or consent of instructor. Group study for graduate students. Intensive examination of health-related topics. (F,SP) Staff

299. Independent Study and Research in Health and Medical Sciences. (1-10) Course may be repeated for credit. Independent study. One unit of credit represents 4 hours of student work per week in the regular semester. Prerequisites: Graduate standing in HMS Program or consent of sponsoring faculty member. Independent study work, reading, and writing is an area related to program of study, sponsored by an approved faculty member and approved by program adviser. (F,SP) Staff

Health Services and Policy Analysis

(School of Public Health, Interdepartmental Graduate Groups)

Department Office: 411 Warren Hall, (510) 643-8571
hspa.berkeley.edu
Chair: William Dow, Ph.D.
Professors: Eugene Bardach, Ph.D. (Public Policy)
Joan Bloom, Ph.D. (Public Health)
Neil Fligstein, Ph.D. (Economics)
Eugene Bardach, Ph.D. (Public Health)
Eugene Bardach, Ph.D. (Public Policy)
Chair: William Dow, Ph.D.
Sylvia Guendelman, Ph.D. (Public Health)
Helen Ann Halpin, Ph.D. (Public Health)

Health Services and Policy Analysis / 293
Overview

The Ph.D. group in Health Services and Policy Analysis is interdisciplinary. Students receive a Ph.D. degree from the Graduate Division of the Berkeley campus. The group is within the academic jurisdiction of the Graduate Council and is administratively located in the Division of Health Policy and Management.

The group integrates and applies disciplinary knowledge in economics, politics, and organizational theory to the health care system. Students receive a rigorous grounding in research methods and the application of these methods to the analysis of health policy issues. Specialty fields in economics, political science, and organizational theory are offered in a mixed-discipline setting.

Field of Concentration

Fields Defined by Period

• Pre-Modern History
• Modern Economic History
• Modern Political History
• Modern Social History
• Modern Economic History
• Modern Political History
• Modern Social History

• One survey course in the history of the United States;
• One survey course in the history of another world region;
• One course in the history of health policy, economics of health policy, or health services research;
• One course in the history of the health care system.

Additional Courses

Additional coursework must meet the following criteria:

• A minimum of 3 units of coursework must be from courses focused on one or more of the following periods:
  • Ancitic and Classical (to 1500)
  • Medieval (to 1500)
  • Early Modern (to 1700)
  • Modern (to 1900)
  • Contemporary (after 1900)

• One course in the history of the United States;
• One course in the history of another world region;
• One course in the history of the health care system;
• One course in the history of health policy, economics of health policy, or health services research;
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• One course in the history of the United States;
• One course in the history of another world region;
• One course in the history of the health care system;
• One course in the history of health policy, economics of health policy, or health services research;
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  • Modern (to 1900)
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• One course in the history of the United States;
• One course in the history of another world region;
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• One course in the history of health policy, economics of health policy, or health services research;
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• One course in the history of another world region;
• One course in the history of the health care system;
• One course in the history of health policy, economics of health policy, or health services research;
• One course in the history of the health care system.
A century (for example, the 13th century, the 18th century, the 19th century)

An age of transregional connection or crisis (for example, the age of global voyages, the age of revolutions)

An empire (for example, the Roman Empire, the British Empire, the Japanese Empire)

A geopolitical region (for example, East Africa, Eastern Europe, Latin America, the Middle East, Southeast Asia)

A physical region (for example, the Atlantic world, the Black Sea, the Indian Ocean, the Mediterranean, the Persian Gulf)

Field Defined by Theme

Childhood and family history, gender history, imperialism and colonialism, legal history, race and ethnicity, history of religion, history of science, history of technology, urban history.

Remember that these sample lists are suggestive rather than exhaustive or prescriptive. Students are free to design their own fields by selecting, for example, a geographical emphasis on the Mediterranean while specifying an interest in the early modern period. In general, students should select fields with breadth and comparative dimensions.

Undergraduate Honors Program

To graduate with honors in history, a major must achieve a general GPA of 3.3, a departmental GPA of 3.5, and a minimum grade of A- in History 101.

To be eligible for graduating with high honors in history, a major must achieve a general GPA of 3.3, a departmental GPA of 3.5, and a grade of A in History 101. The student must also receive a nomination from the 101 instructor. The decision to award high honors, made in consultation with a second reader of the thesis, rests with the Honors Committee.

To be eligible for graduation with highest honors in history, a major must achieve a general GPA of 3.3, a departmental GPA of 3.7, and a grade of A in History 101. The student must also receive a nomination for highest honors from the 101 instructor and be selected by the Honors Committee.

A major who is eligible for honors after completing History 101 and is interested in continued research may pursue a second thesis project under the rubric of H195. The second project may substitute for the 101 thesis in determining eligibility for high or highest honors if the student meets the GPA standards and receives a nomination from the H195 instructor.

Higher Degrees

Students planning to work toward the degrees of M.A. and Ph.D. should address inquiries to Graduate Admissions, Department of History. Candidates will be admitted for the fall semester only.

Further Information

The online Schedule of Classes issued before each semester and the department course descriptions issued at the beginning of each semester provide further detailed information about the courses offered by the History Department, including when and by whom each course will be given.

Lower Division Courses

R1. The Practice of History. (4) Three hours of lecture and two hours of discussion per week. Intended for nonmajors as well as prospective majors, this course introduces students to the discipline of history as a humanistic approach to the experiences of people in time and space. How do historians interpret and debate the past? How do they gather and make use of their materials and sources? Readings include the works of historians from different cultural traditions, contemporary historical debates, and an exploration of historical sources available at Berkeley. Satisfies half of the Reading and Composition requirement. (F,SP)

3. After the Roman Empire: the East. (4) Three hours of lecture and two hours of discussion per week. A general introduction to the study of history, this course focuses on Byzantium and the Islamic world, two medieval successors to the Roman empire in the Eastern Mediterranean and the Near East. This course has three aims: to provide an outline of events that transpired in this area from the fourth to the fifteenth centuries; to explain how a modern historian can approach medieval sources in order to reconstruct various aspects of the past; and to discuss the commonalities and differences of pre-colonial societies, and how lessons learnt in this class can be applied to the study of other time periods and geographic locations. (F,SP) Staff

4. Origins of Western Civilization. Three hours of lecture and two hours of discussion per week. Introductory study of major historical events in the origins of western civilization. Emphasis on class discussions, readings in the sources, and writing of essays. (F,SP)

6A. The Ancient Mediterranean World. (4) (F,SP)[Staff]

8B. Medieval Europe. (4) (F,SP)[Staff]

5. European Civilization from the Renaissance to the Present. Three hours of lecture and two hours of discussion per week. A survey of Europe from the Renaissance to the present. (F,SP)

6. China. Three hours of lecture and two hours of discussion per week. (F,SP)

9. Asian History. Three hours of lecture and two hours of discussion per week. (F,SP)

12. The Middle East. (4) Three hours of lecture and two hours of discussion per week. (F,SP)

13. China. Three hours of lecture and two hours of discussion per week. (F,SP)

14. Introduction to the History of Japan. (4) Three hours of lecture and two hours of discussion per week. Formerly 9B. This is an introduction to Chinese history from the 13th through the 20th centuries—from the Mongols and Kublai Khan’s conquest of southern China to the amazing turnaround following the death of Mao Zedong in 1976 and the opening of the era of reform that has led to China’s emergence as a major economic and strategic power today. The course assumes no prior knowledge of Chinese history. (F,SP)

16AC. The Forging of the U.S.: Expansion and Interaction among American Regions. (4) Three hours of lecture and two hours of discussion per week. Formerly 16. Considers the culturally diverse Americans who reside within the geographical boundaries of today’s U.S. The history, societies, cultures, perceptions, and laws of the subject matter will be examined. The course is required for all majors and for all minors as part of the American Cultures requirement. (F,SP)

10. African History. (4) Three hours of lecture and two hours of discussion per week. An introductory survey of the history of Africa. (F,SP)

11. India. (4) Three hours of lecture and two hours of discussion per week. (F,SP)

12. The Middle East. (4) Three hours of lecture and two hours of discussion per week. (F,SP)

13. China. Three hours of lecture and two hours of discussion per week. (F,SP)

13A. History of China. Origins to the Mongol Conquest. (4) Formerly 94A. The history of China from its beginnings to the destruction of the Song Dynasty by the Mongols in the 13th century. Topics to be covered include the emergence of Chinese civilization, the Chinese language, early religions, the creation of the first empire, law, Buddhism and religious Taoism, the socioeconomic revolution of the 10th to 12th centuries, identities (male and female, Chinese and “barbarian”), lyric poetry, and painting and calligraphy. Comparisons between China and Europe will be made at strategic points. (F,SP)

13B. Introduction to Chinese History from the Mongols to Mao. (4) Formerly 94A. This is an introduction to Chinese history from the 13th through the 20th centuries—from the Mongols and Kublai Khan’s conquest of southern China to the amazing turnaround following the death of Mao Zedong in 1976 and the opening of the era of reform that has led to China’s emergence as a major economic and strategic power today. The course assumes no prior knowledge of Chinese history. (F,SP)

14. Introduction to the History of Japan. (4) Three hours of lecture and two hours of discussion per week. Formerly 9B. This is a brisk introduction to the nearly two millennia of recorded Japanese history. As a survey, the course gives attention to broad themes and problems in Japan’s political, social, and cultural/intellectual history. Topics include the dialectic of national and local identities, the shaping of Japanese politics, Japan’s interaction with the Asian continent and the Western world, and the relation of past to present in modern times. (F,SP)

16AC. The Forging of the U.S.: Expansion and Interaction among American Regions. (4) Three hours of lecture and two hours of discussion per week. Formerly 16. Considers the culturally diverse Americans who reside within the geographical boundaries of today’s U.S. The history, societies, cultures, perceptions, and laws of the subject matter will be examined. The course is required for all majors and for all minors as part of the American Cultures requirement. (F,SP)

23. Freshman Seminar. (1) Course may be repeated for credit as topic varies. One hour of seminar per week. Sections 1-3 to be graded on a passed/not passed basis. Sections 4-5 to be graded on a letter-grade basis. The Freshman Seminar Program has been designed to provide new students with the opportunity to explore an intellectual topic with a faculty member in a small seminar setting. Freshman seminars are offered in all campus departments and topics vary from department to department and semester to semester. Enrollment limited to 15 freshmen.

30. Science and Society. Three hours of lecture and two hours of discussion per week. (F,SP)

30A. Science from Antiquity through Newton. (4) The emergence of science as an organized activity. (F,SP)

30B. Science, Technology, and Society since Newton. (4) The development of science and its applications as a major force in modern society. (F,SP)

39. Freshman Sophomore Seminar. Course may be repeated for credit with different instructor. Seminar Prerequisites: Permission of women and sophomores. Freshman and sophomore seminars offer lower division students the opportunity to explore an intellectual topic with a faculty member and a group of
peers in a small-group setting. These seminars are offered in all campus departments; topics vary from year to year. (F,SP)

39W. Ethno-Racial Mixture and Identity in Modern America. (4) This course satisfies the American Cultures requirement. (F,SP)

84. Sophomore Seminar. (1,2) Course may be repeated for credit as topics vary. One hour of seminar per week per unit for 15 weeks. One and one-half hours of seminar per week per unit for 10 weeks. Two hours of seminar per week per unit for eight weeks. Three hours of seminar per week per unit for five weeks. Sections 1-2 to be graded on a passed/not passed basis. Sections 3-4 to be graded on a letter-grade basis. Prerequisites: At discretion of instructor. Sophomore seminars are interactive courses offered by faculty members in departments all across the campus. Sophomore seminars offer opportunity for close, regular intellectual contact between faculty members and students in the crucial second year. The topics vary from department to department and semester to semester. Enrollment limited to 15 sophomores. (F,SP)

98. Directed Group Study for Lower Division Students. (2) Course may be repeated for credit. Three hours of directed group study per week. Must be taken on a passed/not passed basis. Prerequisites: Lower division standing. Lectures and small group discussion focusing on topics of interest that vary from semester to semester. Grading based on discussion and written work. (F,SP)

98X. Directed Group Study. (1) Course may be repeated for credit. One hour of directed group study per week. Must be taken on a passed/not passed basis. Only for students enrolled in a lower-division history lecture course. An extra weekly session emphasizing writing and speaking skills, taken in addition to regular lecture and discussion.

Upper Division Courses

100. Special Topics. (4) Course may be repeated for credit. Four hours of lecture/discussion per week. Designed primarily to permit the instructor to deal with a topic with which they are especially concerned, usually more restricted than the subject matter of a regular lecture course. A combination of informal lectures and discussions, term papers, and examinations, with all grading by the instructor. Instructors and subjects to vary. Consult department catalog during pre-enrollment week each semester. (F,SP)

100AC. Special Topics. (4) Four hours of lecture/discussion per week. Designed primarily to permit the instructor to deal with a topic with which they are especially concerned, usually more restricted than the subject matter of a regular lecture course. A combination of informal lectures and discussions, term papers, and examinations, with all grading by the instructor. Instructors and subjects to vary. This course satisfies the American Cultures requirement. (F,SP)

101. Seminar in Historical Research and Writing for History Majors. (5) Three hours of seminar per week. Individual research projects carried out in seminar sections in various historical fields resulting in a lengthy paper, with readings and discussions on general problems of historical inquiry. In addition to regular class meetings, individual consultations with the instructor, research, and preparation totaling 10 to 12 hours per week are required. (F,SP)

110. Africa. Three hours of lecture and one hour of discussion per week. (F,SP)

111B. Modern Southeast Asia. (4) Three hours of lecture and one hour of discussion per week. Major themes in modern Southeast Asian history with an emphasis on cross-country comparisons involving the region's largest and most populous countries: Thailand, Burma, Vietnam, Indonesia, and the Philippines. Also listed as Southeast Asian C111B. (F,SP) Staff

111C. Political and Cultural History of Vietnam. (4) Three hours of lecture and one hour of discussion per week. This course provides an introduction to the main issues in Vietnamese history from the mythic and archaeologica

112B. Modern South Africa, 1652-Present. (4) Three hours of lecture and one hour of discussion per week. This course will examine three centuries of South African history that account for the origin and development of the world's only dismantled apartheid regime. Our aim is to understand the major historical forces that progressively shaped what became a turbulent socio-cultural, economic, political, and racial frontier. (F,SP)

112B. Modern South Africa. 1652-Present. (4) Three hours of lecture and one hour of discussion per week. This course will examine three centuries of South African history that account for the origin and development of the world's only dismantled apartheid regime. Our aim is to understand the major historical forces that progressively shaped what became a turbulent socio-cultural, economic, political, and racial frontier. (F,SP)
114. India. Three hours of lecture and one hour of discussion per week.

114A. Medieval and Early Modern India to the Coming of the British. (4)

114B. Modern South Asia. (4)

116. China. Three hours of lecture and one hour of discussion per week.

116B. Two Golden Ages: China During the Tang and Song Dynasties. (4) This course explores Chinese history and culture in the period from the seventh to the 13th centuries, when China achieved unprecedented military, political, and cultural power in East Asia. It concentrates on the fundamental transformation of state and society that took place between the eighth and ninth centuries, and on the nature of the new “early modern” order that had come into existence by the end of the Southern Song. Topics of special concern are economic and political power, technology, religion and philosophy, and poetry and painting.

116C. Modern China. (4)

116D. Twentieth-Century China. (4) Chinese history from the decline of the Qing empire to the reforms under the Chinese Communist Party in the late 20th century. (F,SP)

117. Topics in Chinese History. Three hours of lecture and one hour of discussion per week.

117A. Chinese Popular Culture. (4) It is impossible to understand Chinese history and culture without knowing what ordinary people thought, felt, and believed. In this course, our primary concerns will be (1) the built environment—village form, houses, temples; (2) village festivals and domestic rituals; (3) the rituals and scriptures of local cults; (4) opera, storytelling, and other forms of entertainment; and (5) popular visual arts. These subjects will be studied through both written and visual documentation. (F,SP)

117C. Reading the Visual in Chinese History. (4) This course brings a thematic approach to the critical analysis of the visual in Chinese history. In focusing on key elements of material culture and emphasizing how they have been viewed at specific moments in Chinese history, the course teaches students of history how to achieve a more balanced picture of the past drawn from both visual and literary records. Inevitably, the course tries to determine for a particular temporal and geographical setting what is ordinary or conventional and what is not; also to rethink the metaphors that currently dominate thinking about China. No prior acquaintance with Chinese history is required for the course. (F,SP)

117D. The Chinese Body: Gender and Sex, Health, and Medicine. (4) This course brings a thematic approach to the critical analysis of the "Chinese body," as constructed before the 20th century, from four main perspectives, those of (1) gender, (2) sexual activity, (3) health, and (4) medicine. A variety of sources, material and literary, attest to changing perceptions over time, through the continuing use of standard vocabulary by Yin/Yang and the Five Phases frequently masked innovations. (F,SP)

118. Japan. Three hours of lecture and one hour of discussion per week.

118A. Archaeological Period to 1800. (4) Emphasis on political, cultural, and intellectual history of the Early Imperial State, Japan’s first military governments, early modern, and Meiji Japan.

118B. 1800-1900. (4) Emphasis on the social and intellectual history of Japan’s pre-war reconstruction.

118C. Empire and Alienation: The 20th Century in Japan. (4) Japan’s experience of the 20th century, beginning with the development of capitalism and the acquisition of an empire, and tracing the achievements and tragedy that came with Japan’s emergence as a world power on social and intellectual history and on how Japan has understood itself and the world in this century. (F,SP)

119A. Postwar Japan. (4) Three hours of lecture and one hour of discussion per week. This course con-
siders the history of Japan since the end of World War II, beginning with an exploration of the war itself and its complex legacy to the postwar era. Using the best recent scholarly works and translated novels, essays, and poetry along with film and art, we look at the six postwar decades and the transformations of Japanese life that those years have brought. We try, finally, to answer the question: has “postwar” itself come to an end? (F,SP)

120A. American Environmental and Cultural History. (4) Three hours of lecture and one and one-half hours of discussion per week. Formerly C120. History of the American environment and the ways in which different cultures have viewed, managed, and conserved it from colonial times to the present. Cultures include American Indians and European- and African-Americans. Natural resources development includes gathering-hunting-fishing; farming, mining, ranching, forestry; and conservation. Changes in attitudes and behaviors toward nature and past and present conservation and environmental movements are also examined. Also listed as Environ Sci, Policy, and Management 160AC. This course satisfies the American Cultures requirement. (F,SP)

121. The Colonial Period and American Revolution. Three hours of lecture and one hour of discussion per week.

121A. American History, the Colonial Period: The Peoples and Cultures of Early America. (4) America has always been a multicultural society and perhaps at no other time more so than in the 17th and 18th centuries. In this course, we analyse the experiences of Native-, African-, and European-Americans from about the 16th century through 1763 within the framework of early modern social and historical change, focusing upon their conflict and changing gender, religious, social, cultural, economic, and political systems. This course satisfies the American Cultures requirement. (F,SP)

121B. The American Revolution. (4)

122A. Antebellum America: The Advent of Mass Society. (4) Three hours of lecture and one hour of discussion per week. This course examines half a century of life in the United States (roughly from the War of 1812 until the secession of the Southern states), focusing upon their conflict and changing gender, religious, social, cultural, economic, and political systems. This course satisfies the American Cultures requirement. (F,SP)

123. Civil War and Reconstruction. (4) Three hours of lecture and one hour of discussion per week. (F,SP)

124. The Recent United States. Three hours of lecture and one hour of discussion per week. (F)

124A. The United States from the Late 19th Century to the Eve of World War II. (4) During the first half-century before World War II, the United States became an industrialized, urban society with national markets and communications. In this course we will explore in depth some of the most important changes and how they were connected. We will also examine what did not change, and how state and local priorities persisted in many areas of our daily lives; the average American addressed: population movements and efforts to control immigration; the growth of corporations and trade unions; the campaign for women’s suffrage; Prohibition; an end to child labor; the institutionalized education system; and the reshaping of higher education. This course satisfies the American Cultures requirement. (F,SP)

124B. The United States, 1941 to 1980. (4) American culture and political economy amidst affluence and turmoil in war and cold war. This course satisfies the American Cultures requirement. (F,SP)

125. History of African-Americans and Race Relations in the United States. Three hours of lecture and one hour of discussion per week. History of African-Americans: their African backgrounds, slave experience, social and cultural experience since emancipation. The course will consider race relations, particularly between blacks and whites in America.

125A. Creating African America: 1550-1865. (4) (F,SP)

125B. African American Freedom Struggles: 1865 to the Present. (4) (F,SP)

126. The West in United States History. (4) Three hours of lecture and one hour of discussion per week. A cultural and social history of westward migration from the 16th to the 20th Centuries. This course satisfies the American Cultures requirement. (F,SP)

127A. California. (4) Three hours of lecture and one hour of discussion per week. Formerly 127. The history of California from pre-European contact to the present, with emphasis on the diversity of cultures and the interplay of social, economic, and political developments. This course satisfies the American Cultures requirement. (F,SP)

128. Liberal Superpower: Reform and Political Economy in Postwar U.S. History. (4) Three hours of lecture and one hour of discussion per week. Formerly 139D. This course will examine the fate of pre-World War II important political ideals and distinctive institutional configurations under the restructing regime of the Cold War, in a sense, asking ourselves whether it is a paradox in need of unraveling or an artfully constructed falsehood to declare the "Cold War in Europe" as a liberally superpower.” (F,SP)

C129. Children Through History: Social Practices and Social Welfare. (4) Three hours of lecture and one hour of discussion per week. This course brings together the methods of historical analysis and the techniques of social welfare professionals to create a new and provocative examination of children and childhood in America. Topics covered will include childbirth and infancy, children’s rights, learning, and the state of the superparent. A significant research paper is required. Also listed as Undergrad Interdisciplinary Studies C132 and Social Welfare C129. (F,SP)

130. Diplomatic History of the United States. Three hours of lecture and one hour of discussion per week. European diplomatic impact on emerging America’s foreign policy, colonial, revolutionary, and constitutional periods. Nineteenth century expansionism to imperialism, Spanish-American War and aftermath. Twentieth century war and peace, Wilson and Roosevelt in World Wars I and II, the consequent Cold War to the present.

130A. The Rising American Empire: From Principle to Spanish-American War. (4)

130B. American Diplomacy: War and Peace in the 20th Century. (4) (F,SP)

131. Social History of the United States. Three hours of lecture and one hour of discussion per week. The nature and development of social and economic institutions, class, family and racial relationships, sex roles, and cultural norms in the United States.

131A. 1607-1865. (4)

131A. Social History of the United States: From Settlement to Civil War. (4)

131B. Creating Modern American Society: From the End of the Civil War to the Global Age. (4)

C132B. Intellectual History of the United States. (4) Students will receive no credit for C132B after taking C132A. Three hours of lecture and one hour of discussion per week. American Studies C132B. (F,SP)

134. The Age of the City. Three hours of lecture and one hour of discussion per week. (F,SP)

134A. The Age of the City: The 19th Century. (4) A cultural and social history of urban life in America with emphasis on the 19th century. This course satisfies the American Cultures requirement. (F,SP)

134B. The Age of the City: The 20th Century to the Present. (4) A cultural and social history of urban life in America since the beginning of the 20th century. This course satisfies the American Cultures requirement. (F,SP)
135. American Indian History: Precontact to the Present. (4) Three hours of lecture and one hour of discussion per week. This course will provide an introduction to the theories that explain the varying history of the American continent. Students will study the diversity of Native American cultures, examine the impact of European contact, and explore the modern-day challenges faced by American Indians. (F,SP)

136. Women’s Lives: The 20th Century. (4) Three hours of lecture and one hour of discussion per week. This course examines the lives of women through a century of extraordinary change, using autobiographical writings as our guide. Lectures will describe a fundamental transformation in the structures of gender, including work, politics, sexuality, and family. Class readings, including memoirs and autobiographical novels representing a variety of classes, races, ethnicities, and generations, demonstrate how these changes were enacted by women themselves. (F,SP)

137AC. The Repealing of America. (4) Three hours of lecture and one hour of discussion per week. This course examines the coming together of people from five continents to the United States and provides an historical overview of the shifting patterns of immigration. The course begins in the colonial era when servants and indentured servants from Europe migrated to America and then follows the migration of the pre-industrial immigrants, through migration streams during the industrial and "post-industrial" eras of the nation. This course satisfies the American Cultures requirement. (F)

138. History of Science in the U.S. (4) Three hours of lecture and one hour of discussion per week. History of science in the U.S. from the colonial period to the present, with a focus on the contentious debates over the place of science within cultural, religious, and social institutions. Emphasis on institutions for the diffusion of scientific knowledge, with special attention to the relationships between science and technology and between science and the state. (F) Carson

139. Topics in United States History. Three hours of lecture and one hour of discussion per week. (F,SP)

139A. American Labor History. (4) This course explores the history of labor and working people in the United States from the 1830s to the 1960s, examining workers' experiences and expectations within the context of major trends and events in American history (wars, depressions, migrations, reform movements, state action, and political economy) and against the backdrop of everyday life in America, including consumption, commercial leisure, religious practices, and popular culture). Special emphasis will be placed on the varying experiences and perspectives of African Americans, European Americans, and Asian Americans during this period. This course satisfies the American Cultures requirement. (F,SP)

C139B. The American Immigrant Experience. (4) Three hours of lecture, one hour of self-paced laboratory, and one hour of optional discussion section per week. History of the United States is the story of migration. This course presents the evolution of the American population from about 20,000 BC with the goal of understanding the interdependent roles of history and demography. As an American culture class, special attention is given to the experiences of 19th- and 20th-century African and European immigrants and 20th- and 21st-century Asian and Latin American immigrants. Two substantial laboratory assignments; faculty work with students is assigned. Also listed as Demography 145AC. This course satisfies the American Cultures requirement. (SP) Mason

139C. Recent US Social Movements: Difference, Identity, and Power in American Culture. (4) This course will examine the post-World War II social movements of African Americans, Native Americans, Chicanos, and Asian Americans. We will explore the cultural-historical context, function, and meaning of these social movements for peoples of color specifically and race relations generally. This course satisfies the American Cultures requirement. (F,SP)

139D. Liberal Superpower: Reform and Political Economy in Postwar U.S. History. (4) This course will examine the fate of previously important political ideals and distinctive institutional configurations under the restructuring regime of the Cold War, in a sense, asking ourselves whether it is a paradox in need of unraveling or an artfully constructed falsehood to describe the postwar United States as a "liberal superpower." (F,SP)

140. Mexico. Three hours of lecture and one hour of discussion per week. (F,SP)

140B. Modern Mexico. (4) This course offers a broad view of Mexican history from the late colonial period to the present. (F,SP)

141. Social History of Latin America. Three hours of lecture and one hour of discussion per week.


143. Brazil. (4) Three hours of lecture and one hour of discussion per week. From 16th century conquest and settlement to the emergence of an industrial economy during the post-1964 period of military rule. Emphasis on independence of colony on empire, on plantation agriculture, slavery, export economy, and the transition from agrarian to industrial society.

146. Latin American Women. (4) Three hours of lecture and one hour of discussion per week. This class surveys the experiences and impact of women in Latin America from the pre-conquest period to the present, as well as the ways that gender ideologies (like patriarchy, honor-shame, machismo) have influenced Latin American history. (F,SP)

149. Medieval Italy. Three hours of lecture and one hour of discussion per week. (F,SP)

149B. Italy in the Age of Dante (1000-1350). (4) This course is a survey of the history of northern Italy during the central Middle Ages (1000-1350). It traces the emergence, flowering, and decline of the "communes," the independent city republics that made Italian political life distinctive during the Middle Ages. The course explores the culture of these dynamic urban communities, especially emphasizing the rich visual and material culture, as well as the particular relationship between religion and society in Italy before the Renaissance. (F,SP)

150. Medieval England. Three hours of lecture and one hour of discussion per week. Emphasis on interpretation of primary sources.

150A. The Anglo-Saxon Period. (4) From the Romans through the Norman conquest (to Domesday Book and Eadmer). (F,SP)

150B. From the Conquest to 1290. (4) Government, observation of government, community, religion, and social change. (SP)


151. Britain, 1848-1997. Three hours of lecture and one hour of discussion per week. This course will provide a survey of the social, political, and cultural histories of Britain over the last 150 years. These histories will be used to address the changing nature of citizenship in Britain and its role in understanding more generally. It looks at the changing nature of citizenship in Britain and its role in understanding more generally. It looks at British society as it visibly changed during this transitional period. (F,SP)

151B. Britain, 1600-1851. (4) This is a course about the history of Britain that asks why this small island nation was so central to how Europeans and others understood world history more generally. It looks at the paradox of Britain's institutionalization, class conflict or its absence, consumer culture, parliamentary democracy, religious tolerance, imperial expansion, and modernity generally. It begins with the aftershocks of Europe's first revolution and ends with the first world's fair, 1851's Great Exhibition. (F,SP)

151C. Britain, 1849-1997. (4) This lecture course provides a survey of the social, political, and cultural histories of Britain over the last 150 years. The focus is on the changing nature of citizenship in Britain and its role in understanding more generally. It looks at the changing nature of citizenship in Britain and its role in understanding more generally. It looks at British society as it visibly changed during this transitional period. (F,SP)

152. Topics in the History of the British Isles. Three hours of lecture and one hour of discussion per week. (F,SP)

152A. Ireland Since the Union. (4) Ireland from the Union of 1801 to the 1970s.

153. British Empire and Commonwealth. (4) Three hours of lecture and one hour of discussion per week. (F,SP)

154. Canada. (4) Three hours of lecture and one hour of discussion per week. A survey of Canadian history from exploration and first settlement through colonial times to Confederation and nationhood to the present.

155. Medieval Europe. Three hours of lecture and one hour of discussion per week. (F,SP)

156. Modern Europe. Three hours of lecture and one hour of discussion per week. (F,SP)

157. The Renaissance and the Reformation. (4) Three hours of lecture and one hour of discussion per week. (F,SP)

158. Modern Europe. Three hours of lecture and one hour of discussion per week. (F,SP)

159. European Economic History. Three hours of lecture and one hour of discussion per week. (F,SP)
159A. European Economic History. (4) Survey of the economic and social developments of Europe up to the eve of industrialization. Including the transformation of peasant agrarian economies, capitalist organization, colonial expansion, and international trade. This course is equivalent to Economics 111A; students will not receive credit for both courses.

159B. European Economic History. (4) The Industrial Revolution and the rise of the European economy to world prominence, 19th century, emphasizing the diffusion of the modern industrial system and its consequences, the world trading system, the rise of modern imperialism. This course is equivalent to Economics 111B; students will not receive credit for both courses.

160. The International Economy of the 20th Century. (4) Three hours of lecture and one hour of discussion per week. Development and crises of the advanced economies, with particular emphasis on trade relations with third world countries. Economic impact of war, business cycles, and social movements. This course is equivalent to Economics 115; students will not receive credit for both courses.

161. Emergence of Modern Industrial Societies. (4) Four hours of lecture per week. Survey of the development of the modern political economies of the United States, Europe, and Japan; evolution and interaction of the major institutions of advanced capitalist societies; differences and similarities of their business communities, labor organization, and patterns of government relationships with the private sector. (C135, H) (F,SP)

162A. Wars, Empires, Nations: European Interna.

162B. War and Peace: International History, 1914 to Present. (4) Three hours of lecture and one hour of discussion per week. European international relations in the 19th and 20th centuries, with emphasis on the political and economic forces shaping foreign policy and the international system. (F,SP)

163. Modern European Intellectual History. Three hours of lecture and one hour of discussion per week. Thought and art considered in their social and political contexts.

163A. The Dialectic of Enlightenment and Counter-Enlightenment: European Thought from 1750 to 1870. (4) (F,SP)

163B. The European Mind from Positivism to Post-Structuralism. (4)

164. Social History of Western Europe. Three hours of lecture and one hour of discussion per week.

165. Topics in Modern European History. Three hours of lecture and one hour of discussion per week.

165A. The Reformations of Christendom. (4) This course examines not a period but a process: the form and disruption of the civilization called “Christendom” during the 16th and 17th centuries and its transformation into the familiar Europe of the nation states. (F,SP)

165B. The Revolution in European Culture since the Late 18th Century. (4)

166. Modern France. Three hours of lecture and one hour of discussion per week.

166B. Old Regime and Revolution. (4)

166C. Modern France. (4)

167. Modern Germany. Three hours of lecture and one hour of discussion per week.

167A. Early Modern Germany. (4)

167B. The Rise and Fall of the Second Reich. (4)

167C. Germany in the 20th Century. (4)

168. Spain and Portugal. Three hours of lecture and one hour of discussion per week.

168A. The Spanish and Portuguese Empires in the Golden Age: 1450-1700. (4) This course will focus on the rise and development of early modern Europe’s most astoundingly successful empire, and the costs of environmental and colonial strain to the world’s largest island and the South American mainland. Among the many topics to be covered are: the mechanisms of empire (economic, political, religious); the effects of the conquest of indigenous societies; differences and similarities of their political institutions; and the role of European spiritual influences. Requirements will include a midterm, a final, and an optional final paper. (F,SP)

170C. Poles and Others: The Making of Modern Poland. (4) Three hours of lecture and one hour of discussion per week. This course will examine the history of Poland to the present. It will focus on the political and economic forces shaping the history of Poland and the Polish people, including the history of the Polish state over the past two centuries, the role of Polish intellectuals in the development of Polish thought and art, and the impact of Poland on its neighbors in the region and in the world. Requirements will include a midterm, a final, and an optional final paper. (F,SP)

171A. Russia to 1700. (4)

171B. Russia, 1700-1917. (4)

171C. The Soviet Union, 1917 to the Present. (4)

172. Topics in Russian History. (4) Three hours of lecture and one hour of discussion per week.

173. History of Eastern Europe. Three hours of lecture and one hour of discussion per week.

173C. History of Eastern Europe: From 1900 to the Present. (4) This course will examine the history of 20th-century Eastern Europe, understood as the band of countries stretching from the Baltics to the Balkans, Poland, Czechoslovakia, and Hungary, however, will receive special attention. Topics of study will include politics of the nation-states, national elections and institutions, economic development, social change, and cultural transformations. (F,SP)

177. Armenia. Three hours of lecture and one hour of discussion per week.

177A. Armenia from Ethnogenesis to the Dark Ages. (4) This course will cover close to three millennia of Armenian history, from the process of ethnogenesis to the almost complete destruction of the Armenian “feudal” system by the end of the 15th century. This course is based on the broad framework of Armenian political institutions, territorial organization, economic development, social change, and cultural transformations.

177B. From Pre-Modern Empires to the Present. (4) This survey course will cover the period from the incorporation of most of the Armenian plateau into the Ottoman Empire to the present day. (F,SP)

178. History of the Holocaust. (4) Three hours of lecture and one hour of discussion per week. This course will survey the historical events and intellectual developments leading up to and including the destruction of European Jewry during World War II. We will examine the Shoah (the Hebrew word for the Holocaust) against the backdrop of modern Jewish and modern German History. The course is divided into two main parts: (1) the historical background up to 1939;
and (2) the destruction of European Jewry, 1939-1945. (F,SP) 180. Topics in the History of Biology. (4) Three hours of lecture and one hour of discussion per week. 181. Topics in the History of the Physical Sciences. Three hours of lecture and one hour of discussion per week. 181A. Astronomy and Astrology in Medieval and Early Modern Europe. (4) Prerequisites: Strong grasp of plane geometry. 181B. Modern Physics: From the Atom to Big Science. (4) Establishment of the ideas and institutions of modern physics. Undoing the classical world picture: radioactivity, Einstein, quantum mechanics, philosophical disputes. The evolving structure of the discipline, links with industry and government, World War II and the atomic bomb. Postwar conceptual consolidation and the emergence of big science. (F,SP) 185. History of Christianity. Three hours of lecture and one hour of discussion per week. Christianity as a cultural, social, and literary phenomenon in light of the historical and, as it has responded to cultural, social, and political change. (F,SP) 185A. History of Christianity to the Crusades. (4) (F,SP) 185B. Christianity in the Modern World. (4) 190. Society and the Sexes in Europe and the U.S., 1750 to the Present. (4) Three hours of lecture and one hour of discussion per week. Sex roles, sexuality and gender systems in social, political, economic and cultural life. This is a comparative course: specific societies (at least two) and periods to be covered will vary by semester. It will focus on specific historical events, issues, and periods in which gender was an especially significant factor. (F,SP) C191. Death, Dying, and Modern Medicine: Historical and Contemporary Perspectives. (4) Three hours of lecture and two hours of discussion per week. This course will study the end of life—dying and death—from the perspective of medicine and history. It seeks to confront the humanist with the quotidian dilemmas of modern clinical practice and medicine’s deep engagement with death more generally. It invites pre-med, pre-law, and public policy students to understand the social, ethical and philosophical questions raised by medicine and death. (F,SP) H195. Senior Honors. (4) Independent. Prerequisites: Senior honors standing. Limited to senior honors candidates. Directed study centering upon the preparation of an honors thesis. Supervisors will be assigned by the graduate committee. Credit limited to departmental credit. Course may be repeated for credit. Independent. Must be taken on a satisfactory/unsatisfactory basis. Prerequisites: Consent of instructor. 290. Historical Colloquium. (1) Course may be repeated for credit. Two hours of lecture per week. Must be taken on a satisfactory/unsatisfactory basis. Prerequisites: Consent of instructor. Presentation and discussion of papers on current research. Designed especially for candidates for doctoral degree. Independent. Must be taken on a satisfactory/unsatisfactory basis. Prerequisites: For candidates for doctoral degree. Independent study, in consultation with the graduate advisor, to prepare students for language examinations and the doctoral examination. (F,SP) Professional Courses 300. Teaching History at the University. (2) Two hours of seminar per week. Must be taken on a satisfactory/unsatisfactory basis. This class will introduce graduate students to a variety of techniques and theories used in teaching history at the university level. It will examine readings dealing with a range of classroom situations, opportunities, and challenges, with the goal of enabling future college teachers of history to understand the learning process of their students and to develop and improve their own teaching skills. The course will have two primary goals: (1) to train graduate students to work more effectively as graduate student instructors in history classes at Berkeley; and (2) to introduce students to techniques of designing and running their own classes that they will use when they become independent instructors and, ultimately, professors of history in their own right. (F,SP) Interdepartmental Studies Courses Upper Division Courses IDS 100AC. Technology and the American Experience. (4) Three hours of lecture and one hour of discussion per week. The history of technology in America and the place of technology in the experience, philosophy, and culture of different American groups. The technological practices and attitudes of Native Americans and of European Americans before 1700. Technological clashes, transfers, and dialogues between different American Cultures. Technology and the public and pastoral ideals. The relationship of slavery and technology. The industrial and agricultural revolutions: winners and losers. Immigration and technological progress in the 20th century. Digital technology and the global village. Sponsoring departments: Engineering Interdisciplinary Studies and History. This course satisfies the American Cultures requirement. (SP)
Industrial Engineering and Operations Research Major in the College of Engineering

Industrial engineering and operations research are closely related fields that deal with the design, analysis, and control of complex systems which include people, machines, material, and information, and their interactions. Each of these systems, with their environment, normal models, often computer-based, are extensively used in systems analysis, while systems design, as in other fields of engineering, requires well-developed integrative skills and creativity. The theoretical foundations of optimization, stochastic systems, reliability, and engineering economics often form the basis for operations research studies. Industrial engineering frequently uses mathematics, including probability and statistics, and operations research, systems theory and modeling, computer science, algorithms, and optimization techniques to model and solve problems in an area of their choice.

The core of the program includes basic science and engineering courses, including probability and statistics in engineering optimization and stochastic models. This forms the methodological foundation for upper division requirements. The College of Engineering’s Department of Industrial Engineering and Operations Research (IEOR) involving the analysis and design of production and service systems, information systems, and human work systems and organization, among others.

Lower Division Requirements. Economics 1 or 2 or 3; Mathematics 1A, 1B, 53, 54; Chemistry 1A, 1B, 53, 54; Physics 7A and 7B; Physics 10. Students may choose from the following categories, including a minimum of three courses in Category A and a minimum of one course in category B. Category A—IEOR 100, 150, 151, 155, 166; Category B—IEOR 115, 140, 170, 171.

Students must complete a course in computer programming by the end of their sophomore year. CS 9C, 9F, 9G, or any equivalent coursework (with approved petition) is acceptable.

Operations Research and Management Major in the College of Letters and Science

The Bachelor of Arts program in Operations Research and Management Science is offered through the College of Letters and Science. In the Operations Research and Management Science major, students develop solid quantitative, model-building, and problem-solving skills through core courses in mathematics, including probability and statistics, and operations research, economics, and finance.

Graduate Programs

Graduate programs are offered leading to the M.S., M.Eng., Ph.D. or D.Eng.

The programs have been developed to meet the needs of individuals with backgrounds in engineering or the mathematical sciences who wish to enhance their knowledge of the theory, development, and use of quantitative models for the analysis, design, and organization of complex systems in the industrial, service, transportation, or health care sectors. Students may concentrate on theoretical studies in preparation for doctoral-level research, or on applications of state-of-the-art techniques to real world problems.

Undergraduates from scientific disciplines other than engineering may be accepted into these programs. A master’s degree may be earned by those familiar with computer programming. Doctoral degree requirements include oral examination in the major and two minor fields followed by a dissertation demonstrating ability to conduct independent advanced research. Several computing laboratories, as well as a robotics laboratory, are available for graduate research.

The department requires all undergraduate applicants to submit scores of the general Graduate Record Examination (GRE). Further information on graduate programs may be obtained from the Industrial Engineering and Operations Research Office, 414 Etcheverry Hall, Berkeley, CA 94720-1777, and from the Announcement of the College of Engineering.

Note: In addition to the courses listed in the IEOR section of this catalog, the Department of Industrial Engineering and Operations Research offers the following courses found in the Engineering section: 102, Introduction to Operations Research; 120, Principles of Engineering Economics.

Lower Division Courses

24. Freshman Seminars. (1) Course may be repeated for credit as topic varies. One hour of seminar per week. Sections 1-2 to be graded on a letter-grade basis. Sections 3-4 to be graded on a pass/failed basis. Berkeley Seminars are open to all undergraduates.

39. Freshman/Sophomore Seminar. Course may be repeated for credit as topic varies. Seminar format. Sections 1-2 to be graded on a letter-grade basis. Sections 3-4 to be graded on a pass/failed basis. Berkeley Seminars are open to all undergraduates.

84. Sophomore Seminar. (1,2) Course may be repeated for credit as topic varies. One hour of seminar per week for one term for 15 weeks. Courses in this seminar series are offered in all campus departments; topics vary from department to department and from semester to semester. (SP) Ross
Design and implementation of Formulation to linear programs. Supervised independent Probability review. Conditional independencies on a database design project. WWW design and commercial applications. Relational algebra, SQL, nor-
mathematics. Two hours of lecture per week. Prerequi-

tes: 160, 162 or senior standing. (F,SP)

130. Methods of Manufacturing Improvement. (3) Three hours of lecture per week. Prerequi-

tes: Mathematics 54, Statistics 134 (may be taken concurrently). Analytical techniques for the improvement of manu-
facturing performance along the dimensions of produc-
dvices and company visitation per week. Prerequisites: 131, 160, 161, 162, 165, Engineering 120, 190, and three other In-
dustrial Engineering and Operations Research elec-
tives. Application of systems analysis and industrial engineering to the analysis, planning, and/or design of in-
strumentation and control systems. Consideration of
tical and economic aspects of equipment and process design. Students work in teams under faculty supervision. Topics vary yearly. (F,SP) Staff

190. Advanced Topics in Industrial Engineering and Operations Research. Course may be repeated for credit up to four times for a total of twelve quarter units. Prerequisites: Consent of instructor. The 190 series covers cur-
rent topics of research interest in industrial engineering and operations research. The course content may vary
semester to semester. Check with the department for current term topics. (F,SP) Staff

190B. Entrepreneurial Marketing and Finance. (1-4) (F,SP) 190E. Entrepreneurship and Innovation: Life Sciences. (1) (F,SP)

H196A-H196B. Operations Research and Manage-
ment Science Honors Thesis. (3-5) Course may be repeated for credit with consent of instructor. Must be taken on a passed/not passed basis. Prerequisites: Open only to students in the honors program. Pri-

dividual study and research for at least one academic year on a special problem approved by a member of the faculty; preparation of the thesis on broader as-
pects of this work. (F,SP) Staff

198. Directed Group Studies for Advanced Under-

(1-4) Course may be repeated for credit. Must be taken on a passed/not passed basis. Prerequisites: Senior standing in Engineering. Group studies of selected topics. Semester course unit value and contact hours will have a one-to-one ratio. (F,SP) Staff

215. Analysis and Design of Databases. (3) Two hours of lecture and one hour of laboratory/project per week. Prerequisites: Graduate standing. Advanced topics in information management, focusing on design and development of databases, query languages, and data models. New issues raised by the World Wide Web. Research projects on current topics in information technology. (F) Goldberg

221. Introduction to Financial Engineering. (3) Three hours of lecture per week. Prerequisites: 162 or 262A, course in probability, or consent of instructor. A course on financial concepts useful for engineers that will cover, among other topics, those of interest rates, present values, arbitrage, geometric Brownian motion, option pricing, and portfolio optimization. The Black-Scholes option-pricing formula will be derived and studied. Stochastic simulation ideas will be introduced and used to obtain the risk-neutral geometric Brownian motion values for certain types of Asian, barrier, and lookback options. Portfolio optimization problems will be considered both from a mean-variance and from a utility function point of view. Methods for evalu-
ating real options will be presented. The use of finan-
cial engineering models as a framework for ana-
yzing financial engineering problems will be shown. (F) Alder, Oren, Ross

250. Introduction to Production Planning and Lo-
listics Models. (3) Three hours of lecture per week. Prerequisites: 262A and 263A taken concurrently. This will be an introductory course in the use of stochastic modeling and simulation methods to address the practical problems of production planning and control in the process industries. Preliminary topics include inventory theory, model building, and problem solving techniques through the use of Monte Carlo simulation. (F,SP) Staff
for inventory control, production scheduling, production planning, facility location and logistics network design, vehicle routing, and demand forecasting will be discussed. (F) Kaminsky

251. Facilities Design and Logistics. (3) Three hours of lecture per week. Prerequisites: 230A and 234. Design and analysis of models and algorithms for facility location, vehicle routing, and facility layout problems. Emphasis will be placed on both the use of computational and theoretical analysis of models and algorithms. (SP) Kaminsky

254. Production and Inventory Systems. (3) Three hours of lecture per week. Prerequisites: 262A or 150; 263A or 161 recommended. Mathematical and computer methods for design, planning, scheduling, and control in manufacturing and distribution systems. (SP) Staff

261. Experimental with Simulated Systems. (3) Three hours of lecture per week. Prerequisites: 263A and an upper division statistics course. This course will introduce graduate and upper division undergraduate students to modern methods for simulating discrete event models of complex stochastic systems. About a third of the course will be devoted to system modeling, with the remaining two-thirds concentrating on simulation experimental design and analysis. (F,SP) Ross, Schruben, Shankhikumar

262A. Mathematical Programming I. (4) Three hours of lecture and one hour of discussion per week. Prerequisites: Mathematics 110. Basic graduate course in linear programming and introduction to network flows and non-linear programming. Formulation and model building. The simplex method and its variants. Duality theory, sensitivity analysis, parametric programming, convergence (theoretical and practical). Polynomial time algorithms. Introduction to network flows models. Optimal conditions for nonlinear optimization problems. (F) Adler

262B. Mathematical Programming II. (3) Three hours of lecture per week. Prerequisites: Math 110 or equivalent. Basic first year graduate course in optimization of non-linear programs. Formulation and model building. Theory of optimization for constrained and unconstrained problems. Study of algorithms for non-linear optimization with emphasis on design considerations and performance evaluation. (SP) Adler, Oren

263A. Applied Stochastic Process I. (4) Three hours of lecture and one hour of discussion per week. Prerequisites: Statistics 134 or Statistics 200A. Conditional Expectation, Poisson and renewal processes. Renewal reward processes with application to inventory, congestion, and replacement models. Discrete and continuous time Markov chains; with applications to various stochastic systems—such as exponential queueing systems, inventory models and reliability systems. (F) Ross, Shankhikumar


264. Computational Optimization. (3) Three hours of lecture per week. Prerequisites: 262A. This course is on the theory and algorithms for the solution of large-scale optimization problems. The focus is on converting the theory of optimization into effective computational techniques. Course topics include an introduction to polyhedral theory, cutting plane methods, relaxation, decomposition and heuristic approaches for large-scale optimization problems. (SP) Atamturk

266. Network Flows and Graphs. (3) Three hours of lecture per week. Prerequisites: 262A (may be taken concurrently). Survey of solution techniques and problems in network optimization. Applications in terms of transportation networks, Max-flow min-cut theorem, Minimum cost flows. Multiterminal and multicommodity flows. Relationship with linear programming, transportation problems, electrical networks and critical path scheduling. (SP) Adler, Hochbaum


268. Applied Dynamic Programming. (3) Three hours of lecture per week. Prerequisites: Mathematics 51. Dynamic programming formulation of deterministic decision process problems, analytical and computational methods of solution, application to problems of equipment purchasing, allocation and scheduling, sampling, search and routing. Brief introduction to decision making under risk and uncertainty. (F) Dreyfus

269. Integer Programming and Combinatorial Optimization. (3) Three hours of lecture per week. Prerequisites: 262A. The course deals with discrete optimization problems and their complexity. These topics include complexity analysis of algorithms and its drawbacks; solving a system of linear integer equations and inequalities; strongly polynomial algorithms, network flow problems (including matching and branching); polyhedral optimization; branch and bound and Lagrangean relaxation. Hochbaum

290A. Dynamic Production Theory and Planning Models. (3) Three hours of lecture per week. Prerequisites: 262A. A course of study in the development of dynamic optimization models and models and algorithms for production planning and scheduling. Relationship to theory of production, inventory theory and hierarchical organization of production management.

290K. Advanced Topics in Robot Algorithms. (3) Course may be repeated for credit. Three hours of lecture per week. Prerequisites: Graduate standing in engineering. We study a variety of geometric methods and algorithms for robotics and manufacturing. Such algorithms can be used to evolve a robot motion plan. Topics to vary from semester to semester. Goldberg

290R. Topics in Risk Theory. (3) Three hours of lecture per week. Prerequisites: 263A. Seminar on selected topics from financial and technological risk theory, such as risk modeling, attitudes towards risk and utility theory, portfolio management, gambling and speculation, insurance and other risk-sharing arrangements, actuarial models of risk generation and run off, risk reserves, Bayesian forecasting and credibility approximations, influence diagrams, decision trees. Topics will vary from year to year.

298. Group Studies, Seminars, or Group Research. (1-4) Course may be repeated for credit. Seminars. Sections 1-4 may be repeated on a satisfactory/unsatisfactory basis. Sections 5-8 must be graded on a letter grade basis. Advanced seminars in industrial engineering and operations research. (F,SP) Staff

299. Individual Study or Research. (1-12) Course may be repeated for credit. Individual conferences. Sections 1-18 to be graded on a satisfactory/unsatisfactory basis. Sections 19-36 to be graded on a letter grade basis. Individual investigation of advanced industrial engineering problems. (F,SP) Staff

601. Individual Study for Master’s Students. (1-12) Course may be repeated for credit. Individual conferences. Must be taken on a satisfactory/unsatisfactory basis. Individual study in consultation with the field adviser. Units may not be used to meet either unit or residence requirements for a master’s degree. (F,SP) Staff

602. Individual Study for Doctoral Students. (1-12) Course may be repeated for credit. Individual conferences. Must be taken on a satisfactory/unsatisfactory basis. Individual study in consultation with the major field adviser. Course must be scheduled to provide an opportunity for qualified students to prepare themselves for the various examinations required of candidates for the Ph.D. (and other doctoral degrees). May not be used for unit or residence requirements for the doctoral degree. (F,SP) Staff

Program Overview

The Graduate Program in Infectious Diseases and Immunology provides opportunities for students who are interested in research involving the study of infectious agents, their interaction with human and other hosts, and their relationship with the environment. The program is unique in its emphasis on integrated multidisciplinary training. Important areas of inquiry include the biology of host-pathogen interactions, molecular and cellular aspects of pathogenesis, the ecology and evolution of disease agents, environmental factors in transmission, intermediate hosts and vectors, the biology of surveillance and epidemiological analysis, vaccine and drug development, and public health practices for disease prevention and control. Students matriculating through this program will acquire expertise in fundamental infectious disease research and in disciplines essential in the development of modern infectious disease agents, environmental agencies, and biotechnology. For further information, contact the Graduate Office at (510) 642-2513 or visit the website at socrates.berkeley.edu/idgroup.

Infectious Diseases and Immunology

(School of Public Health, Interdepartmental Graduate Groups)

Office: 233 Warren Hall, (510) 642-2513 socrates.berkeley.edu/idgroup

Chair: Richard Stephens, Ph.D.

Professors
Carolyn Bertozzi, Ph.D. (Chemistry)
Robert S. Lane, Ph.D. (Environmental Science, Policy, and Management)
Feiyong Liu, Ph.D. (Public Health)
Terry Macher, Ph.D. (Molecular and Cell Biology)
Daniel Portnoy, Ph.D. (Public Health/Molecular and Cell Biology)
Arthur Reingold, M.D. (Public Health)
Lee W. Riley, M.D. (Public Health)
George Sensabaugh, D.Crim. (Public Health)
Nilabh Shastri, Ph.D. (Molecular and Cell Biology)
Richard Stephens, Ph.D. (Public Health)
John Taylor, Ph.D. (Microbiology and Immunology)

Associate Professors
Gertrude Buehning, Ph.D. (Public Health)
Suzanne Fleischig, O.D., Ph.D. (Optometry)
Eva Harris, Ph.D. (Public Health)
Ellen Robey, Ph.D. (Molecular and Cell Biology)
Matthew Welch, Ph.D. (Molecular and Cell Biology)
Giang Zhou, Ph.D. (Molecular and Cell Biology)

Assistant Professor
Laurent Coscoy, Ph.D. (Molecular and Cell Biology)
Information
(School of Information)

Office: 102 South Hall, (510) 642-1464
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Dean: AnnaLee Saxenian, Ph.D.

Professors
Yale M. Braunstein, Ph.D. Economics of information and communication
Ray R. Larson, Ph.D. Information retrieval system design and evaluation
Pamela Samuelson, J.D. Intellectual property law

Affiliated Professors
Paul Duguid, M.A. Socio-cultural and community aspects of information
Kimiko Ryokai, Ph.D. Theory and practice of interactive media

Adjunct Professors
John Chuang, Ph.D. Computer networks, Internet economics
Kim Kitamura, Ph.D. Digital interaction, information visualization, empirical computational linguistics, information access systems

Assistant Professors
Coye Cشhres, Ph.D. Social exchange, social psychology, social networks and information exchange
Kimiko Ryokai, Ph.D. Theory and practice of interactive media

Upper Division Courses
C103. History of Information. (3) Three hours of lecture per week. Prerequisites: Upper level undergraduates. Formerly Information Systems and Management C103. This course explores the history of information and communication systems, with a focus on key figures and organizations that have shaped the field, including the development of key technologies and institutions. Topics include the history of the internet, the evolution of information technologies, and the role of information in society. (F,SP)

C141. Search Engines: Technology, Society, and Business. (2) Two hours of lecture and one hour of discussion per week. Formerly Information Systems and Management 141. This course explores the history and development of search engines, emphasizing their role in information access and the broader implications for society. Topics include the technical and social aspects of search engine design, including algorithmic evaluation, user behavior, and the impact of search engines on information access and privacy.

C142AC. Access to American Cultural Heritage. (3) Three hours of lecture per week. Formerly Information Systems and Management 142AC. An introduction to issues in the preservation, description, and use of tangible and intangible cultural heritage. Topics include the role of digital libraries in cultural resource management, and the significance of cultural policies and cultural institutions. (F)

C146. Foundations of New Media. (4) Three hours of lecture and one hour of laboratory per week. Formerly Information Systems and Management 146. An introduction to interdisciplinary study and design of New Media. Survey of theoretical and practical foundations of New Media including theory and history; analysis and reception; computational foundations; social implications; interaction, visual, physical, and narrative design. Introduction to interdisciplinary study and design of New Media. (F)

C182AC. Print, Literacy, and Power in America to 1900. (3) Three hours of lecture per week. Formerly Information Systems and Management 182AC. Focus on European Americans, Native Americans, and in the western United States, Asian American and Chicano/Latinos. The course explores the nature of oral and print societies as found in the focus cultures to assess the dominant print culture on oral cultures. Image in woodcut and engraving as information and as propaganda. The role of education in achieving literacy. The emergence of an African American press in the 19th century, tied to growing political support from the abolitionist press, is in striking contrast to the nearly invisible Native American voice confined to the reservation. San Francisco is a case study of the early emergence of a multicultural print and education environment, followed by restrictive laws, propaganda, and educational system that enforced cultural standardization and use of English. Printing technology tends toward centralization, standardization, and few participants, an environment that inhibits the voices of a multicultural, multilingual population. This course satisfies the American Cultures requirement. (F)

182AC. Print, Literacy, and Power in America to 1900. (3) Three hours of lecture per week. Formerly Information Systems and Management 182AC. Focus on European Americans, Native Americans, and in the western United States, Asian American and Chicano/Latinos. The course explores the nature of oral and print societies as found in the focus cultures to assess the dominant print culture on oral cultures. Image in woodcut and engraving as information and as propaganda. The role of education in achieving literacy. The emergence of an African American press in the 19th century, tied to growing political support from the abolitionist press, is in striking contrast to the nearly invisible Native American voice confined to the reservation. San Francisco is a case study of the early emergence of a multicultural print and education environment, followed by restrictive laws, propaganda, and educational system that enforced cultural standardization and use of English. Printing technology tends toward centralization, standardization, and few participants, an environment that inhibits the voices of a multicultural, multilingual population. This course satisfies the American Cultures requirement. (F)

Staff

Kimiko Ryokai, Ph.D. Language and culture in a digital age
Michael K. Buckland
Mary Kay Duggan, Ph.D. History of information, music and communication
J. Douglas Tygar, Ph.D. Electronic commerce, cryptography, and economic development
Michael D. Cooper
Paul Duguid, M.A. Socio-cultural and community aspects of information
Kimiko Ryokai, Ph.D. Theory and practice of interactive media

Ph.D. Program
The doctoral program is a research-oriented program in which the student chooses specific fields of specialization, prepares sufficiently in the literature and the research of those fields to pass a qualifying examination, and completes original research culminating in the written dissertation. The degree of Doctor of Philosophy is conferred in recognition of a candidate's grasp of a broad field of learning and distinguished accomplishment in that field through contribution of an original piece of research revealing high critical ability and powers of imagination and synthesis.

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nomics, and social conditions that have made such “killer apps” possible. Students will learn how to think strategically and entrepreneurially about IT, whether for personal, business, or nonprofit applications. Also listed as Interdisciplinary Studies Field Maj C184. (F,SP) Staff

190. Special Topics in Information. (Course may be repeated for credit. Three hours of seminar per week. Prerequisites: Consent of instructor. Formerly Information Systems and Management 190. A seminar focusing on topics of current interest. Topics will vary. A seminar paper will be required. Open to students from other departments. (F,SP) Staff

198. Directed Group Study for Advanced Undergraduates. (Course may be repeated for credit. One hour of unscheduled lecture per week. Prerequisites: Consent of instructor. May be arranged. Must be taken on a pass/credit basis. Formerly Information Systems and Management 198. (F,SP) Staff

199. Individual Study. (Course may be repeated for credit. Enrollment is restricted; see the Introduction to Courses and Curricula section of this catalog. Must be taken on a pass/credit basis. Formerly Information Systems and Management 199. Individual study of topics in information management and systems under faculty supervision. (F,SP) Staff

Graduate Courses


203. Social and Organizational Issues of Information. (3) Three hours of lecture per week. Prerequisites: Consent of instructor required for nonmajors. Formerly Information Systems and Management 203. The relationship between information and information systems, technology, practices, and artifacts on how people organize their work, interact, and understand experience. Individual, group, organizational, and societal issues in information production and use, information systems design and management, and information and communication technologies. Social science research methods for understanding information issues. (F,SP) Cheshire

205. Information Law and Policy. (2) Two hours of lecture and two hours of laboratory per week. Prerequisites: Consent of instructor required for nonmajors. Formerly Information Systems and Management 205. Law and public policies that mediate the tension between free flow and restrictions on the flow of information. This course introduces students to copyright and other forms of legal protection for databases, licensing of information, consumer protection, liability for insecure systems and defective information, privacy, and national and international information policy. (F,SP) Samuelson

206. Distributed Computing Applications and Infrastructure. (Course may be repeated for credit. Three hours of lecture and one hour of laboratory per week. Prerequisites: Consent of instructor required for nonmajors. Formerly Information Systems and Management 206. Technological foundations for computing and communications: computer architecture, operating systems, networking, middleware, security, Programming paradigms: object-oriented design, design and analysis, data structures, formal languages. Distributed-system architectures and models, inter-process communications, concurrency, system performance. (F) Chuang

207. Analysis of Information Systems. (3) Three hours of lecture for seven and one-half weeks. Letter grading only. Prerequisites: Consent of instructor. Formerly Information Systems and Management 207. Systems and project management, focusing on the process of information systems analysis and design. Includes such topics as systems analysis, process analysis, cost and statistical analysis, accounting and budgeting, and planning. (F,SP) Braunein

209. Professional Skills Workshop. (2) Two hours of lecture per week. Prerequisites: Consent of instructor. Formerly Information Systems and Management 209. Familiarization of students at all levels and in all environments with the role information plays in the economy and of the role information systems and software play in the organization of information. This course is designed to give students insight into the source and best practice of professionalism, and gives students the chance to refine the essential but relatively undefined working environment. (F,SP) Staff

210. The Information and Services Economy. (3) Three hours of lecture per week. Formerly Information Systems and Management 210. An introduction to services sciences—those interdisciplinary fields that combine social science, business, and engineering knowledge. Topics include the role of organizations and institutions in the delivery of services. (SP) Gлушко, Saxonian

211. Group and Organizational Approaches to Information Systems Use. (3) Three hours of lecture per week. Prerequisites: 203 or consent of instructor. Formerly Information Systems and Management 211. The transmission and use of information within groups such as work groups and organizations. Information flows in organizations. Organizations as information processors. Collaboration, Computer-assisted cooperative work. Influencing strategies. Adoption of innovation. The uses of information for coordination and communication within organizations. (SP) Staff

212. Information in Society. (3) Three hours of lecture per week. Prerequisites: 203 or consent of instructor. Formerly Information Systems and Management 212. The role of information and information technology in organizations and society. Topics include societal needs and demands, sociology of knowledge and science, information seeking and use, information and culture, technology and culture. (SP) Van House


214. Needs and Usability Assessment. (3) Three hours of lecture per week. Prerequisites: 203 or consent of instructor. Formerly Information Systems and Management 214. Concepts and methods of needs and usability assessment. Topics include methods of needs and usability assessment and translating them into design decisions. Topics include methods of identifying and describing user needs and requirements; user-centered design; and design and usability assessment. (SP) Van House

218. The Quality of Information. (3) Three hours of lecture per week. Prerequisites: 203 or consent of instructor. Formerly Information Systems and Management 218. This course explores issues of information quality in mediated communication and how people reach conclusions of information quality, value, or authenticity of content. We will consider the role information systems play in information environments, politics, marketing, strategic planning, and technology, communicative forms, market forces, and institutional and legal frameworks. (F) Duguid, Nunberg

219. Privacy, Security, and Cryptography. (3) Three hours of lecture per week. Prerequisites: 206 or consent of instructor. Formerly Information Systems and Management 219. Policy and technical issues related to ensuring the accuracy and privacy of information. Encoding and decoding techniques including public and private key encryption. Survey of security problems in information systems. Worms, trojan horses, Internet address spoofing. (SP) Tygar

220. Management of Information Systems and Services. (3) Three hours of lecture per week. Formerly Information Systems and Management 220. In a range of internal and external environments, information is used in information organizations. Internal issues: organizational behavior, organizational theory, personnel, budgeting, planning. External issues: organizational information. Also listed as Electrical Engineering C201. (F,SP) Staff

221. Information Policy. (3) Three hours of lecture per week. Formerly Information Systems and Management 221. An examination of the nature of corporate, nonprofit, and governmental information policy. The appropriate role of information, introduction and dissemination of information, the tension between privacy and freedom of access to information. Issues of potential conflicts in values and priorities in information policy. (SP) Braunein

224. Strategic Computing and Communications Convergence. (3) Three hours of lecture per week. Prerequisites: Graduate standing in engineering, business administration, information management and systems, or consent of instructor. Formerly Information Systems and Management C224. Factors strongly impacting the success of new computing and communications products and services (based on underlying technologies such as electronics and software) in commercial applications, technology in organizations and society. Technology trends and limits, economics, standardization, industrial property, government policy, and industrial organization. Strategies to manage the design and marketing of successful products and services. Also listed as Electrical Engineering C201. (F,SP) Staff

227. Studies in Regional Growth and Development. (3) Three hours of seminar per week. Prerequisites: City and Regional Planning 220 or consent of instructor. Formerly Information Systems and Management C227. This course focuses on theory and empirical evidence for regional growth and development, reading and discussion. Also listed as City and Regional Planning C227. (SP) Staff


231. Economics of Information. (3) Three hours of lecture per week. Formerly Information Systems and Management 231. The measurement and analysis of the role information plays in the economy and of the role devoted to production, distribution, and consumption of information. Economic analysis of the information industry. Microeconomics of information. (SP) Braunein

235. Cyberlaw. (3) Three hours of lecture per week. Formerly Information Systems and Management 235. Introduction to legal issues in information, management, antitrust, contract management, international law including intellectual property, trans-border data flow, privacy, labor, and constitutional rights. (SP) Samuelson

237. Intellectual Property Law for the Information Industries. (3) Three hours of lecture per week. Prerequisites: 203 or consent of instructor. Formerly Information Systems and Management C237. The philosophical, legal, historical, and economic analysis of the need for and uses of laws protecting intellectual prop-
Theories and methods for search-basis. Theory and practice of naturalistic basis.

This Topics in information management and systems ware and hardware, networks (e.g., LAN, wide), net-els as XML schemas. (F) Analysis of relevance, utility. Statistical and linguistic experimentation methodology. (SP) query formulation, and output ranking. Filtering meth-

sent of instructor. Formerly Information Systems hours of lecture per week.

Computer Science 160, or consent of instructor. For-

merly Information Systems and Management 250. Computer-Based Communications Systems and Management 257. Database design concepts, query languages for database applications (such as SQL), concurrency control, recovery techniques, database security. Issues in the management of databases. Use of report writers, application generators, high-level interface generators. (SP) Larson

245. Organization of Information in Collections. (3) Three hours of lecture per week. Prerequisites: 202 and 242 or consent of instructor. Formerly Information Systems and Management 243. This course introduces the topics of Document Engi-

neering: specifying, designing, and deploying electronic documents and documentation repositories that enable document-centric applications. These include web services, virtual enterprises, information supply chains, single-source publishing, and syndication in domains as diverse as healthcare, education, e-commerce, and e-government. (SP) Glushak

246. Multimedia Information. (3) Three hours of lecture per week. Prerequisites: 202, 203, or consent of instructor. Formerly Information Systems and Management 245. Standards and practices for or-

ganization and description of bibliographic, textual, and non textual collections. Design, selection, mainte-
nance, and evaluation of cataloging, classification, indexing, and thesaurus systems for specific settings. Codes, formats, and standards for representation and transfer of data. (SP) Larson

247. Information Visualization and Presentation. (3) Three hours of lecture per week. Prerequisites: 213, Computer Science 160, or consent of instructor. Formerly Information Systems and Management 247. The design and presentation of digital information. Use of graphics, animation, sound, visualization software, and hypermedia in presenting information to the user. Methods of presenting complex information to enhance comprehension and analysis. Incorporation of visu-

erization techniques into human-computer interfaces. (SP) Hearst

250. Computer-Based Communications Systems and Networks. (3) Three hours of lecture per week. Prerequisites: 206 or equivalent. Formerly Information Systems and Management 250 Communications con-

cepts, networking, communication software and hardware, networks (e.g., LAN, wide), net-
work protocols (e.g., TCP/IP), network management, distributed information systems. Policy and manage-
ment implications of the technology. (F) Chuang

255. Foundations of Software Design. (4) Three hours of lecture and one hour of laboratory per week. Must be taken on a satisfactory/unsatisfactory basis. Prerequisites: 202 or equivalent. An introductory course in high-level programming language such as C, Java, C++, and other programming paradigms including the object-oriented design. Introduction to design and analysis of algorithms, including algorithms for sorting and searching. The analysis, use, and implementation of data structures important for information systems, including arrays, linked lists, strings, b-trees, and hash tables. Introduction to formal languages including regular expressions and context-

free grammars. (F) Staff

256. Applied Natural Language Processing. (3) Three hours of lecture per week. Prerequisites: 255, a computer science background, or equivalent. Formerly Information Systems and Management 256. This course examines the state-of-the-art in applied Natu-

ral Language Processing (also known as content anal-
ysis and language engineering), with an emphasis on how well existing algorithms perform and how they can be used (or not) in applications. Topics include part-of-
speech tagging, shallow parsing, text classification, in-
formation extraction, incorporation of lexicons and ont-
exologies into text analysis, and question answering. Students will apply and extend existing software tools to text-processing problems. (F,SP) Hearst

257. Database Management. (3) Three hours of lecture per week. Formerly Information Systems and Management 257. Introduction to relational, hierarchical, network and object-oriented database management systems. Database design concepts, query languages for database applications (such as SQL), concurrency control, recovery techniques, database security. Issues in the management of databases. Use of report writers, application generators, high-level interface generators. (SP) Larson

271A. Quantitative Research Methods for Infor-

mation Systems and Management. (3) Three hours of lecture per week. Formerly Information Systems and Management 271. Quantitative methods for data col-

lection and analysis. Research design. Conceptualiza-
tion, operationalization, measurement. Modes of data collection, including experiments, survey research, ob-
servation. Sampling, basics of data analysis. (F) Tygar

271B. Qualitative Research Methods for Infor-

mation Systems and Management. (3) Three hours of lecture per week. Prerequisites: Introductory statis-
tics recommended. Introduction to many different types of quantitative research methods, with an emphasis on linkages between quantitative research methods and qualitative research methods. Introductory and intermediate top-

cics include: defining research problems, theory test-
ing, causal inference, probability, and univariate statistics. Research design and methodology topics include: primary/secondary survey data analysis, experimental designs, and coding qualitative data for quantitative analysis. (SP) Cheshire

cluding interviews, focus groups, naturalistic ob-

servation. Case studies. Analyzing qualitative data. Is-

sues of validity and generalizability in qualitative research. (SP) Staff

280. Information and Communication Technolo-

gies and Development: Context, Strategies and Im-

pacts. (3) Three hours of lecture per week. What role does information and communication technologies play in transforming lives in developing economies? This inter-
disciplinary course positions recent public and pri-
ivate sector initiatives in the context of postwar develop-
ment theory and practice, and surveys methods of evaluating projects that either develop new technolo-
gies such as wireless communications and low-cost computing, or that apply new technologies to areas such as healthcare, government, microfinance, and lit-

eracy. (SP) Staff

285. Design of Library Services. (3) Three hours of lecture per week. Formerly Information Systems and Management 285. The organization and administration of library services and their place in the institutions and communities they serve. Governance, collections, and building. Planning, organizing, innovation, staffing, budgeting, controlling. Technological change, digital li-

braries. Political and economic aspects. (SP) Staff

290. Special Topics in Information. (1-4) Course may be repeated for credit as topic varies. Two to six hours of lecture per week for seven and one-half weeks or one to four hours of lecture per week for 15 weeks. Prerequisites: Consent of instructor. Formerly Information Systems and Management 290. Specific topics, hours, and credit may vary from section to section, year to year. (F,SP) Staff

290A. Special Topics in Information. (1-2) Course may be repeated for credit. One and one-half to two hours of lecture per week for eight weeks. Two hours of lec-
ture per week for six weeks. Three hours of lecture per week for five weeks. Prerequisites: Consent of in-

structor. (F,SP) Staff

295. Doctoral Colloquium. (1) One hour of lecture per week. Must be taken on a satisfactory/unsatis-
factory basis. Prerequisites: Ph.D. candidacy. Formerly Information Systems and Management 295. Colloquia, discussion and readings designed to intro-
duce students to the range of interests of the school. (F) Staff

296A-296B. Seminar. (2-4; 2-4) Course may be re-
peated for credit as topic varies. Two to four hours of seminar per week. Prerequisites: Consent of instruc-
tor. Formerly Information Systems and Management 296A. Topics in information management and related fields. Specific topics vary from year to year. May be offered as a two-semester sequence. (F,SP) Staff

297. Field Study in Information. (1-4) Course may be repeated for credit with consent of instructor. Reg-
ular consultation with faculty supervisor. Prerequisites: Enrolled in the School of information and consent of instructor. Formerly Information Systems and Man-
agement 297. Individual or group study of specific problems in information management systems with emphasis on field projects and studies. (F,SP) Staff

298. Directed Group Study. (1-3) Course may be re-
petitioned for credit as topic varies. Weekly group meetings. Prerequisites: Consent of instructor. Formerly Informa-
tion Systems and Management 298. Group projects on special topics in information management and systems. (F,SP) Staff

299. Individual Study. (1-12) Course may be re-
petitioned for credit as topic varies. Format varies. Prere-
quisites: Consent of instructor. Formerly Information Systems and Management 299. Individual study of topics in information management and systems under faculty supervision. (F,SP) Staff

602. Individual Study for Doctoral Students. (1-5) Course may be repeated for credit. Must be taken on a satisfactory/unsatisfactory basis. Prerequisites: Con-
sent of instructor. Formerly Information Systems and Management 602. Individual study in consultation with the major field adviser, intended to provide an oppor-
tunity for qualified students to prepare themselves for the various examinations required of candidates for the Ph.D. degree. (F,SP) Staff
Integrative Biology

(Combine of Letters and Science)

Department Office: 3060 Valley Life Sciences Building, (510) 643-7330
Graduate Student Services: (510) 643-7420
Undergraduate Student Services: (510) 643-7204, (510) 642-5024
ib.berkeley.edu

Graduate Affairs Office: (510) 643-7330
Chair: Seth B. Holmes, Ph.D., and Ellen Simms, Ph.D.

Professors

Bruce G. Baldwin, Ph.D., University of California, Davis. Systematics and evolution of vascular plants (in residence)

Anthony D. Barnosky, Ph.D., University of Washington, Seattle. Evolutionary parasitology, endocrinology, and behavior

George A. Brooks, Ph.D., University of Michigan. Exercise immunology

Roy L. Caldwell, Ph.D., University of Iowa. Invertebrate behavioral biology and ecology

Ted E. Dawson, Ph.D., University of Washington, Seattle. Physiological plant ecology and stable isotope systematics

Marlan C. Diamond, Ph.D., University of California, Berkeley. Neuroanatomy, environment, immune functions, hormones

Robert Dudley, Ph.D., University of Cambridge. Biomechanics and comparative physiology

Janet M. Fuller, Ph.D., State University of New York, Buffalo. Comparative biomechanics, physiology and functional morphology

Stephen Hickman, Ph.D., McGill University. Animal behavior, physiological substrates of behavior

Travis B. Hayes, Ph.D., University of California, Berkeley. Developmental endocrinology

Carole Hickman, Ph.D., Stanford University. Evolutionary developmental biology, morphogenesis, systematics

John P. Huelsenbeck, Ph.D., University of Texas, Austin. Evolutionary biology, phylogenetics, theory, and evolutionary genetics

Paul K. V. Kirch, Ph.D., Yale University. Origins of Oceanic peoples and the chronology of Pacific settlement, the Lapita cultural complex, evolution of the Polynesian chiefdoms, human impacts to island ecosystems, and the development of a phylogenetic approach in historical paleoanthropology

Mimi A. R. Koehl, Ph.D., Duke University. Invertebrate morphogenesis and biomechanics

David R. Lindberg, Ph.D., University of California at Santa Cruz. Evolutionary biology, ecology

Jeff H. Lipps, Ph.D., University of California at Los Angeles. Paleoneurology of marine environment

Brett D. Mohler, Ph.D., Harvard University. Bryology, systematics, and evolutionary biology

Cristina Moritz, Ph.D., University of Connecticut. Molecular evolution, conservation biology

Kevin Padan, Ph.D., Yale University. Paleontology, evolutionary biology

Nipam Patel, Ph.D., Stanford University. Genetics and molecular studies of neurogenetics

Thomas M. Powell, Ph.D., University of California, Berkeley. Comparative neuroendocrinology

Mary E. Power, Ph.D., University of Washington. Freshwater ecology, food web

Eilen L. Simms, Ph.D., Duke University. Plant ecology and evolution

Montgomery W. Slatkin, Ph.D., Harvard University. Evolutionary theory

Wayne P. Szoka, Ph.D., University of California at Santa Barbara. Population and community ecology

Timothy D. White, Ph.D., University of Michigan, Ann Arbor. Human evolutionary studies

Irving Zucker, Ph.D., University of Chicago. Biological evolution, evolutionary functional morphology

Max Alpert (Emeritus), Ph.D., Columbia University. Cytology, genetics, cell biology

Zedd J. Guidera, Ph.D., University of California, Berkeley. Biology of foraminifera

George W. Barlow (Emeritus), Ph.D., University of California at Los Angeles. Ethology and ichthyology

Howard A. Bern (Emeritus), Ph.D., University of California at Los Angeles. Tissue biology and tumor biology

William A. Clemens, Ph.D., University of California, Berkeley. Vertebrate paleontology

Joseph T. Gregory (Emeritus), Ph.D., University of California, Berkeley. Physiology of amphibians, and reptiles; history of paleontology

Paul Licht (Emeritus), Ph.D., University of Michigan. Comparative endocrinology

William Z. Dickler Jr. (Emeritus), Ph.D., University of Illinois at Urbana-Champaign. Mammary and evolutionary biology

Charles S. Nicoll (Emeritus), Ph.D., Michigan State University. Vertebrate systematics and evolution

Roberta J. Park (Emerita), Ph.D., University of California, Berkeley. History of exercise science and sport

J. Stephen Peters (Emeritus), Ph.D., University of Arizona. Vertebrate paleontology, evolutionary biology

Mario E. Tavolga (Emeritus), Ph.D., Cambridge University. Primate behavior and reproductive ecology

Robert J. Reiter (Emeritus), Ph.D., University of California at Los Angeles. Vertebrate paleontology and evolutionary biology

Daniel H. Wake (Emeritus), Ph.D., University of Southern California. Herpetology and evolutionary biology

Marvalce H. Wake (Emeritus), Ph.D., University of Southern California. Vertebrate evolutionary anatomy, and reproductive biology

Associate Professors

David Ackley, Ph.D., Harvard University. Plant ecology and evolution

Cheryl J. Briggs, Ph.D., University of California, Santa Barbara. Population ecology and theoretical ecology

Eileen A. Laidler, Ph.D., University of Michigan. Behavioral ecology, population and evolutionary biology

Steven L. Lehman, Ph.D., University of California, Berkeley. Motor control

Seth B. Benson (Emeritus), Ph.D., University of California, Berkeley. Mammalogy

Wayne L. Fry (Emeritus), Ph.D., Cornell University. Paleobotany, evolutionary biology

Rudolf Schmid (Emeritus), Ph.D., University of Michigan. California fishes, evolutionary morphology, and comparative morphology of vascular plants

Assistant Professors

George Bentley, Ph.D., University of Bristol, U.K. Avian reproductive biology, mammalian phylogeny and behavior

Rauri Bowe, Ph.D., University of Cape Town. Population dynamics and evolution

Paul Fine, Ph.D., University of Utah. Speciation and biotic diversification

Leslie J. Hilsko, Ph.D., Pennsylvania State University. Mammalian evolutionary biology

Daniela Kauter, Ph.D., Hebrew University. Mamalian physiology

Nicole King, Ph.D., Harvard University. Chorioangiometaglia, animal origins and genome evolution

Ham Lim, Ph.D., University of Cambridge. Systems biology, microbiology, and genome evolution

Jim A. McGuire, Ph.D., University of Texas, Austin. Herpetology and evolutionary biology

Shelia N. Patnek, Ph.D., Duke University. Evolutionary mechanics of animal communication

Adjunct Professors

Walter D. Koenig, Ph.D., University of California, Berkeley. Behavioral ecology and population biology

Donald P. Weis and Mary L. Weis. Invertebrate ecology and ecophysiology

Associate Adjunct Professors

Jeffrey L. Boone, Ph.D., University of Michigan. Comparative genomics and systematics

T. J. Carlson, M.D., Michigan State University. Ethnobotany including medical ethnobotany

Assistant Adjunct Professor


Undergraduate Program

The Department of Integrative Biology offers a program of instruction that focuses on the integration of structure and function in the evolution of diverse biological systems. It investigates integration at all levels of organization from molecules to the biosphere, and in all taxa of organisms from viruses to higher plants and animals.

The department uses many traditional fields and levels of complexity in forging new research directions, asking questions, and answering traditional questions in new ways. The various fields within the department cooperate across disciplinary boundaries, sharing information and knowledge.

Experience in biological or field, technological and independent study will bring about an understanding of scientific logic based on both experimental and historical patterns and processes.

The faculty has special strengths in the disciplines of morphology, organismal physiology, animal behavior, biometric systematics, evolutionary biology, population genetics, and evolution.

Students who major in integrative biology will gain general knowledge in the biological sciences, which provides an excellent foundation for health-related professions, dentistry, veterinary medicine, physical therapy, optometry, etc. or allied careers in human biology (e.g., psychology, sociology, demography, political science, environmental and resource management, law, etc.) or for those interested in biology of organisms and wish to pursue graduate studies in various subdisciplines such as field biology, ecology, behavior, palaeontology, and evolution.

Lower Division.

The foundation for this major includes basic coursework in biology, general chemistry, organic chemistry, physics, and mathematics. Additional coursework in mathematics, statistics, biochemistry, history of biology, and multiple languages may be helpful for those planning on graduate and/or professional studies.

Upper Division.

This curriculum is designed to provide the intellectual tools and techniques necessary to conduct multidisciplinary work in the areas of organismal biology and to prepare students as broad-thinking biologists. No formal specialization is possible as an undergraduate, yet students select courses to reflect interests and areas of focus in preparation to meet major requirements.

Students must complete at least one course in genetics, as well as two lecture/laboratory and/or field courses to provide experience and methodologies for study of both living and extinct organisms, and three courses from designated sub-areas within integrative biology.

Courses for Nonmajors

The department offers a series of courses for students not specializing in integrative biology. These courses provide instructional techniques, as well as general principles of biology from a variety of viewpoints, ranging from the molecular level through behavior and evolution. Each year, a variety of seminars are available for freshmen (IB 24) and sophomores (IB 39, IB 84) to introduce them to areas of integrative biology.

The Major

Note: All courses must be taken for a letter grade.

Lower Division. Required of all students in the major:

Biology 1A (3), 1AL (2), 1B (4); Chemistry 1A (4), 3A (3), 3AL (2), 3B (3), 3BL (2); Mathematics 16A (3); Physics 8A (4), 8B (4).

With approval of an adviser, more advanced courses may be substituted for those listed above.

Upper Division. At least three integrative biology courses—one from each of the following paths, to be selected in consultation with an adviser:

(1) Ecology/evolution/behavior
(2) Physiology/structure/biomechanics
(3) Human biology/health science

One genetics course and two lecture/laboratory, or lecture/laboratory/field courses.

The minimum total upper division units required to complete the major is 26. Students should plan to select the additional upper division courses to reflect areas of interest and intellectual development.

The department web site at ib.berkeley.edu presents greater information about planning a major within this field, such as lists of courses applicable to each major requirement and sample semester-by-semester course schedule plans. Please visit ib.berkeley.edu/student/undergrad/major to explore undergraduate requirements and options.

Junior and seniors are encouraged to pursue independent study research (IB 199) under the supervision of a faculty mentor. Interested students should have completed at least 60 units of credit and be in good academic standing. One can consider possible research opportunities by visiting the web pages of various Integrative Biology faculty, graduate students, and affiliated research centers, museums, and collections at ib.berkeley.edu/research.

Note: Transfer students with 56-70 units must complete all lower division requirements before transferring to Berkeley.

Honors Program. Students with a minimum GPA of 3.3 overall and in the major should consider participating in the honors program. They must identify an appropriate faculty sponsor who agrees to

B prefix=language course for business majors
C prefix=course satisfies R&C requirement
R prefix=course satisfies R&C requirement
A prefix=course satisfies American Cultures requirement
*Professor of the Graduate School
†Recipient of Distinguished Teaching Award

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advise them on an original research project they wish to do and enroll in two semesters (6 units) of the honors thesis course (H196A-196B). These students present the results of the work in the form of a written report, the honors thesis. To graduate with honors, students must maintain a minimum 3.3 grade-point average overall and in the major.

Graduate Program in Integrative Biology

Students planning to enter graduate study in integrative biology are expected to have the equivalent of a major in a biological science, although students with other appropriate backgrounds are encouraged to enter the program. The Department of Integrative Biology offers a Ph.D. program. The program for the Ph.D. varies considerably, according to the background and interests of individual students. All candidates for the Ph.D. must pass an oral qualifying examination. The crucial part of the Ph.D. program is the thesis, based upon original research in an area of interest. The candidate demonstrates the ability to conduct independent study and to incorporate the results in a thesis. One year of experience as a graduate student instructor and a seminar or workshop in scientific writing are required for the Ph.D. program in integrative biology. Details of the program may be obtained from the web site: ib.berkeley.edu.

Research Facilities

The Botanical Garden, located on 34 acres in Strawberry Canyon, provides opportunities for research with living plants, supplies and teaching material for classes on campus, and serves as an outdoor laboratory. Independent laboratories and internship opportunities are available in horticulture and plant conservation. The garden is organized primarily by geographic region: California, South America, Mediterranean, Africa, Australia, Asia, and North America. Specialized collections include succulents and cacti, carnivorous plants, orchids, ferns, roses, tropical plants, a Chinese medicinal herb garden, and a Japanese rock garden. Greenhouse facilities are available at the Botanical Garden Plant Conservation Research Center. For further information about events, programs, and opportunities to visit the garden, inquiries can be addressed to the director by mail at UC Botanical Garden, 200 Centennial Drive #5045, Berkeley, CA 94720-5045; e-mailed to garden@berkeley.edu, or by calling (510) 643-2755.

The Cancer Research Laboratory is a research institute at the University of California, Berkeley, for the underpinning of basic cancer research. The central research program represents a multidisciplinary approach to an understanding of the mechanism of neoplastic transformation using a variety of systems. Graduate student and post-doctoral research programs are supported in various areas of biology, biochemistry, cell biology, endocrinology, genetics, immunology, molecular biology, and tumor virology. The Cancer Research Laboratory also operates five research facilities: (1) Flow Cytometry Facility for fluorescence-activated cell sorting and analysis; (2) Molecular Imaging Facility with two-photon microscopes for image analysis; (3) Proteomic Mass Spectrometry Facility; (4) In vivo Imaging, DNA Microarray Consortium; and (5) the Gene Targeting Facility for construction of transgenic and chimeric mice. Instrumentation in the facilities is operated by highly trained user instruction in house and methods and techniques associated with each facility. For more information, go to biology.berkeley.edu/crl.

The Center for Interdisciplinary Bio-inspiration in Education and Research (CIBER) has been established to lead in the development of a new field of Integrative Systems Biomechanics that moves biology toward greater integration with other sciences and with the local forensic engineering to a degree not seen before. The discipline focuses on the physics of how organisms function and interact with their environment. The goal is to build a comprehensive, predictive, and evolutionary tool that can be applied to a diversity of organismal and unique innovations. The fluid and solid mechanics of organisms are examined using direct experimentation, comparative and phylogenetic approaches and both mathematical and physical modeling. Using this approach, the next generation of scientists and engineers will gain experience in collaboration across disciplines as well as how to extract principles in biology through engineering. In addition to developing innovative methods of teaching and research, CIBER is establishing an interdisciplinary teaching laboratory that will allow students in undergraduate as well as graduate courses to address challenging problems that will give them a meaningful interdisciplinary learning experience. These facilities will be used in a number of existing and new courses, at both the undergraduate and graduate levels. For more information on CIBER, see the web site at ciber.berkeley.edu.

The Center for Stable Isotope Biogeochemistry (CSIB), located on campus, is an analytical facility established as a joint program between the Graduate Program in Geography, Chemical Engineering, and the Earth Sciences. The Center provides high precision, state-of-the-art, instrumentation for analyzing stable isotope composition of a diverse array of materials (e.g., plant and animal tissue samples, soils, atmospheric gases, water, etc.), as well as space for purifying, extracting, and preparing sample material for analysis. The center also serves as a focal point for research and training for students and professionals (many of whom are also faculty), as well as postdoctoral and faculty needs. This equipment includes several mass spectrometers for carbon and nitrogen isotopes (IRMS), a high-temperature vacuum chamber, a high-resolution laser-IRMS mass spectrometer, and other accessories. The Center supports the research and training needs of the Center for Stable Isotope Biogeochemistry and the broader University of California Stable Isotope Biogeochemistry Program.

The Human Evolution Research Center (HERC) is dedicated to the study of human origins and evolution. HERC represents an international focal point for field and laboratory research and education. It is a center for the study of the processes and products of human evolution. Research by the HERC includes both field and laboratory investigation. The center's collections and facilities provide support to faculty and students working on important, large-scale investigations. These include the Middle Awajish Project and The Revealing Hominid Origins Initiative (RHOI). For more information on HERC, see their website at herc.berkeley.edu.

The Jane Gray Research Greenhouse is operated by the Department of Environmental Science, Policy, and Management, 201 Wellman Hall #3112, University of California, Berkeley, CA 94720-3112, roderick@berkeley.edu, or Dr. Neil Davies, Research Director, nndavies@moorea.berkeley.edu. More information can be found on the station web site at moorea.berkeley.edu.

The Museum of Paleontology (UCMP), a research institute for faculty, staff, students, and qualified visiting scholars, has one of the largest collaborative laboratories in the nation, as well as large collections of modern vertebrate skeletal elements and invertebrates. The collection is worldwide in scope. UCMP has an active education and outreach program, and comprises approximately 2,400 square feet of state-of-the-art research space, used for projects by faculty and students. The climate management system is computer-controlled and monitored conditions. For more information, see b.berkeley.edu/research/facilities/greenhouse.

The Volunteer Center for the Study of the Environment (UCVCE) is a research institute affiliated with the University of California, Berkeley, for the study of the environment. The Volunteer Center is a research institute that serves as an interdisciplinary center for research on environmental stewardship. The Volunteer Center is a research institute for undergraduate and graduate students. The Volunteer Center is a research institute for undergraduate and graduate students. The Volunteer Center is a research institute for undergraduate and graduate students.
The goal of the course, Biomotion, is to involve students in an integrated treatment of the history, biology, and evolution of animal motion. Lectures and small group discussions will focus on the morphology, behavior, population and conservation problems of marine mammals. The course is designed to provide new students with the opportunity to explore an intellectual topic with a faculty member in a human seminar setting. The seminar is open to all students; designed for those not specializing in biology. Principles of evolution will be studied in detail. Three hours of lecture per week. Term paper and oral presentation. Students will learn how to develop a project, collect and record data, conduct and analyze experiments, write a report, and present a summary. Consent of instructor; selected by interview. Project may require traveling to off-campus sites. Students are required to attend at least three department seminars and write a short critique of each. (F,SP) Staff

The University and Jepson Herbaria offer a worldwide reference-research collection, laboratories, and collections that form a foundation for basic research in systematic botany, ecology, phyto- geography, evolution, and comparative genomics. These resources are available not only to faculty, staff, and students but also to visiting scholars and biologists throughout the United States and other countries. Resources include (1) the collection itself, over two million specimens with special strengths in the angiosperm flora of California and elsewhere on the Pacific Rim, as well as in cryptogenic groups including ferns, bryophytes, fungi, and algae; (2) modern laboratories for all types of plant sciences (from morphology, anatomy, and cytology to molecular systematics); and (3) extensive electronic resources ranging from an online flora of California, to the world’s standard index of algal nomenclature, to databases for green plants. Libraries should be directed to the Director, University and Jepson Herbaria, University of California, Berkeley; Berkeley, CA 94720.

The University of California Natural Reserve System (NRS) was founded in 1965 to establish and maintain significant examples of California’s diverse aquatic and terrestrial ecosystems for university-level teaching, research, and public service. The 33 reserves are open to all qualified individuals and institutions for scholarly work in disciplines ranging from geology and environmental sciences to anthropology and art. For more information on the NRS, contact the UC Office of the President at (510) 987-0150 or to nsr.ucop.edu. For specific information regarding the four reserves administered by the Berkeley campus, contact faculty reserve manager Mary Power at (510) 643-7776 or mpower@berkeley.edu. The Berkeley campus administrative staff is available to assist reserve visitors.

• The Angel Coast Reserve in Mendocino County is one of the most diverse reserves, with 26 terrestrial and four aquatic habitat types. Located along a belt of highly deformed, well-defined coastal ridges cut by the South Fork of the Eel River, the reserve contains the largest virgin Douglas fir community left in the state, as well as four undisturbed watersheds. It is part of the UNESCO California Coast Ranges Biosphere Reserve. For more information, contact Peter Steel at (707) 984-6653 or psteel@nature.berkeley.edu.

• The Chichering American River Reserve in Placer County is located in the sub-alpine headwaters basin of the North Fork of the American River. The reserve has diverse topography, soil, and vegetation regimes on sedimentary, igneous, and metamorphic substrates. The reserve supports approximately 1,000 plant species, unusual red fir and mixed-conifer old-growth forest communities, and a diverse wildlife population. Long-term research will continue on the endangered wolverine. For more information, contact James Kirchner at (510) 643-8559 or kirchner@geomorph.berkeley.edu.

• The Huns Jenny Pygmy Forest Reserve in Mendocino County supports elfin forests of endemic plant, bishop pine, and unusual evergreen shrub species on highly podzolized, old marine terrace soils. This reserve is adjacent to lands managed by The Nature Conservancy. For more information, contact Ronald G. Amundson at (510) 643-7890 or earthy@nature.berkeley.edu.

• The Hastings Natural History Reserve in Monterey County contains a representative sample of California’s interior Coast Range ecosystem, with annual and perennial grasslands, oak woodlands, chaparral, and running streams. The reserve has 620 vascular plant species and 166 bird species. While noted for its 50-year research history on vertebrate ecology and oak woodland biology, the reserve is also a rich resource of data on native grassland restoration. For more information, contact Mark Stromberg at (831) 659-2664 or stromber@berkeley.edu.

Lower Division Courses

24. Freshman Seminars. (1) May be repeated for credit as topics vary. One hour of seminar per week. Sections 1-4 to be graded on a letter-grade basis. The Berkeley Seminar Program has been designed to provide new students with the opportunity to explore an intellectual topic with a faculty member in a human seminar setting. The seminar is open to all students; designed for those not specializing in biology. Principles of evolution will be studied in detail. Three hours of lecture per week. Term paper and oral presentation. (F,SP) Staff

31. Animal Behavior Biology: An Evolutionary Perspective. Behavior View. (3) Students will receive no credit for 31 after taking C144 or Psychology 115B. Two hours of lecture, one hour of film/demonstration and one hour of discussion per week. Prerequisites: Open to all students; designed for those not specializing in biology. Principles of evolution will be studied in detail. Three hours of lecture per week. Term paper and oral presentation. (SP) Caldwell

32. Biomotion. (3) Two hours of lecture and one hour of discussion per week. Prerequisites: Open to all students; designed for those not specializing in biology. Principles of evolution will be studied in detail. Three hours of lecture per week. Term paper and oral presentation. (F,SP) Staff

35AC. Human Biological Variation. (3) Three hours of lecture per week. This course addresses modern human biological variation from historical, comparative, and evolutionary perspectives. Special attention will be paid to the emerging discipline of behavioral ecology. (SP) Caldwell

35D. Marine Mammals. (2) Two hours of lecture per week. Prerequisites: Designed for those not specializing in marine biology, chemistry, physics, or marine science required. One mammal evolution, behavior, biology, ecology, and politics with a concentration on those species found in the North Pacific. Coverage would include: origin and evolution of marine mammals, ancient and modern, anatomy and ecology; basic biology and anatomy of marine mammal groups, and North Pacific species in particular; ecological interactions and role in marine ecosystems; and interactions between humans and marine mammals. (F) Lindberg

C82. Introduction to Oceans. (2) Two hours of lecture per week. Prerequisites: One of the following courses at high school level: physics, chemistry, or biology is recommended. Formerly 82. The geology, physics, and biology of the world ocean. The application of oceanographic sciences to human problems will be explored through special topics such as energy from the sea, marine pollution, food from the sea, and climate change. Also listed as Earth and Planetary Science C82. (F) Staff

84. Sophomore Seminar. (1,2) Course may be repeated for credit as topics vary. One hour of seminar per week for 15 units. One and one-half hours of seminar per week for 10 units. Two and one-half hours of seminar per week for 8 weeks. Three hours of seminar per week for 5 weeks. Sections 1-2 to be graded on a passed/not passed basis. Section 1 is a lower-division seminar on marine biology. Prerequisites: At discretion of instructor. Sophomore seminars are small interactive courses offered by faculty members in departments across the campus. Sophomore seminars offer opportunity for close, regular interaction with faculty members and students in the crucial second year. The topics vary from department to department and semester to semester. Enrollment limited to 15 sophomores.

95. Special Research Project in Biology 1B. (1) Four hours of special field research per week. Must be taken on a passed/not passed basis. Prerequisites: Consent of instructor; selected by interview. Students enrolled in Biology 1B can participate in special field research in addition to attending regular laboratory sections. Students work independently with minimal supervision. Students will learn how to develop a project, collect and record data, conduct and analyze experiments, write a report, and make a presentation. Project may require traveling to off-campus sites. Students are required to attend at least three department seminars and write a short critique of each. (F,SP) Staff

C96. Studying the Biological Sciences. (2) Two hours of lecture per week. Must be taken on a passed/not passed basis. Prerequisites: Consent of instructor. Freshmen will be introduced to the “culture” of the biological sciences, along with an in-depth orientation to the academic life and the culture of the university as they relate to majoring in biology. Students will learn concepts, skills, and information that they can use in their major course, and as future science professionals. Restricted to freshmen in the biology scholars program. Also listed as Plant and Microbial Biology C96 and Molecular and Cell Biology C96. (F) Kane

98. Directed Group Study. (1-4) One hour of group study per unit per week. Must be taken on a passed/not passed basis. Prerequisites: Freshmen and sophomores only. Lectures and small group discussions focusing on topics of interest, varying from semester to semester. (F,SP) Staff

99. Supervised Independent Study and Research. (1-3) Course may be repeated for credit. Must be taken on a passed/not passed basis. Prerequisites: GPA of 3.4 or greater. Formerly Botany 98, Physiology 98, Botany 98. Lower division independent study and research intended for the academically superior student. Enrollment only with prior approval of faculty advisor directing the research. (F,SP) Staff

Upper Division Courses

C100. Communicating Ocean Science. (3) Two and one-half hours of lecture and one hour of fieldwork per week. Prerequisites: One course in introductory biology, geography, chemistry, or marine science required and interest in ocean science; junior, senior, or graduate standing; consent of instructor required for sophomores. For undergraduate and graduate students interested in improving their ability to communicate their scientific knowledge by teaching ocean science in elementary schools. The course will combine instruction in inquiry-based teaching methods and ocean science with an observed teaching experience in a local school classroom. Thus, students will practice communicating scientific knowledge and receive mentoring on how to improve their presentations. Also listed as Earth and Planetary Science C100. (SP) Ingram

C101. Diversity of Plants and Fungi. (2) Two hours of lecture per week. Prerequisites: Biological 1A-1B. Must be taken concurrently with 101L. An integrated treatment of the biology and evolution of the major groups
102. Introduction to California Plant Life. (2) Two hours of lecture per week. Prerequisites: Biology 1A or consent of instructor. Must be taken concurrently with 102L. The relationship of the main plant groups and the plant communities of California to climate, soil, vegetation, geological and recent history, evolutionary biology, and conservation.

102L. Laboratory in California Plant Life. (2) Six hours of laboratory per week and at least two Saturday field trips. Prerequisites: Biology 1A or 1B or consent of instructor. Must be taken concurrently with 102L. A survey of California Floristics focusing on identification and taxonomy of the main plant genera and major plant families, as well as the use of keys to identify native and introduced ferns, conifers, and flowering plants of the state.

103. Invertebrate Zoology. (3) Three hours of lecture per week. Prerequisites: Biology 1A, 1B. Must be taken concurrently with 103L. Formerly Zoology 108. An introduction to the field of invertebrate zoology, stressing comparative functional morphology, phylogeny, natural history, and aspects of physiology and development. (SP) Staff

103L. Invertebrate Zoology Laboratory. (2) Six hours of laboratory per week plus several weekend field trips. Prerequisites: Biology 1A-1B. Must be taken concurrently with 103. Formerly Zoology 188. Laboratory study of invertebrate diversity and functional morphology, and field study of the natural history of local marine invertebrates. (SP) Staff

104. Natural History of the Vertebrates. (3) Three hours of lecture per week. Prerequisites: Must be taken concurrently with 104L. Formerly Zoology 107. Biology of the vertebrates, exclusive of fish. (SP) Staff

104L. Vertebrate Natural History Laboratory. (2) Three hours of laboratory and a four hour field trip per week plus special field projects. Prerequisites: Biology 1A-1B. Must be taken concurrently with 104. Formerly Zoology 187. Laboratory and field study of local vertebrates exclusive of fish. (SP) Staff

105. Principles of Paleontology. (3) Three hours of lecture and two hours of laboratory per week. Prerequisites: A course in biology, earth science, or anthropology, or consent of instructor. An introduction to concepts and analytical procedures in paleontology. This interdisciplinary course provides an overview of the information content of the fossil record. We will examine the nature of fossil species, populations, and communities; functional morphology; paleoclimatology, systematics, and macroevolution. Laboratories emphasize original problem solving and interpretation of paleontological and materials data as well as develop critical thinking skills. (SP) Hickman

107L. Horticultural Methods in the Botanical Garden. (1) Three hours of laboratory/discussion per week. Must be taken on a passed/not passed basis. Prerequisites: Consent of instructor. Formerly 122L. An introduction to horticultural techniques utilizing the diverse collections of the University Botanical Garden. (F,SP) Staff

110. Principles of Plant Morphology. (2) Two hours of lecture per week. Prerequisites: Biology 1A-1B, Mathematics 1A or 16A, Physics 7A or 7B. An analysis of plant morphology, and field study of the natural history of local marine invertebrates. (SP)

110L. Laboratory for Principles of Plant Morphology. (2) Six hours of laboratory per week. Prerequisites: Biology 1A-1B, Mathematics 1A or 16A, Physics 7A or 7B. An analysis of plant morphology, and field study of the natural history of local marine invertebrates. (SP)

112L. Medical Ethnobotany Laboratory. (2) Six hours of laboratory per week. Prerequisites: Consent of instructor. Formerly 122L. An introduction to horticultural techniques utilizing the diverse collections of the University Botanical Garden. (F,SP) Staff

115. Introduction to Systems in Biology and Medicine. (3) Three hours of lecture and two hours of computer laboratory per week. Prerequisites: Biology 1A-1B, Mathematics 1A or 16A. Seniors majoring in a biology-related major are expected to be in a course wishing to understand and model biological systems. Topics include feedback regulation; competition; cooperation; switches and circuits; communication; randomness; decision-making; chaos and complexity. Examples are selected from areas of medicine and integrative biology to demonstrate the general applicability of systems analysis and to highlight the common themes that link different fields. Students will learn to conceptualize and quantify interactions within biological systems and there will be a strong emphasis on building mathematical and computational models. Students are encouraged to apply the tools and concepts they have learned to their own research and/or interests. (SP) Lyman

117. Medical Ethnobotany. (2) Two hours of lecture per week. Biological diversity and ethnolinguisitic diversity sustain traditional botanical medicine systems of the world. Major topics covered in this course include cultural origins of medicinal plant knowledge on plant-derived pharmaceuticals and phytochemistries; field research methods in ethnobotany and ethno- pharmacology; examples of how traditional botanical medicines provide safe, effective, affordable, and sustainable primary health care to tropical countries; human physiology, human diseases, and mechanisms of action of plant-derived drugs. (F) Carlson

117L. Medical Ethnobotany Laboratory. (2) Six hours of laboratory per week. Prerequisites: Consent of instructor. Students will focus on studying medicinal plants from the major ecosystems and geographical regions of the world. Students will learn common names, scientific names, plant families, field identification techniques, and applications to the uses of medicinal plants. How the medicinal plant is prepared, administered, and used as a pharmaceutical will also be discussed. There will be reference to the phylogenetic relationships between medicinal plants and genera represented by the medicinal plants. (F) Carlson

119. Evaluating Scientific Evidence in Medicine. (3) Two hours of lecture, one computer laboratory, and one discussion per week. Prerequisites: Biology 1A-1B. A course in critical analysis of medical reports and studies using recent controversial topics in medicine.

123. Exercise Physiology. (3) Three hours of lecture per week. Prerequisites: Exercise Physiology 1A, Chemistry 3BL, and either 132 or Molecular and Cell Biology 136. 123A should be taken concurrently with 123AL. Discussions of how chemical energy is captured within cells and how potential chemical energy is converted to muscular work. Energetics, direct and indirect calorimetry, pathways of carbon flow in exercise, ventilation, circulation, skeletal muscle fiber types. (F) Brooks

123AL. Laboratory Exercises and Demonstrations in Exercise Physiology and Metabolism. (2) Three hours of laboratory per week. Prerequisites: 132 and 132L. Obtain practical experience in the measurement of physiological parameters and to be able to compile, compare, contrast, and interpret physiological data. Laboratory demonstrations and exercises will explain by example, the lecture content. (F) Brooks

123B. Exercise Physiology. (3) Three hours of lecture per week. Prerequisites: 123A, 123AL. 123BL must be taken concurrently. 123B should be taken concurrently with 123B L. Discussions of exercise on skeletal muscle; exercise and cardiovascular and chronic disease risks; exercise in the heat, cold, under water, and at altitude; nutrition and performance; effects of acute and chronic exercise on the brain. (F,SP) Staff

123BL. Laboratory Exercises and Demonstrations in Environmental and Exercise Physiology. (1) Three hours of laboratory per week. Prerequisites: 123 and 123L. Obtain practical experience in the measurement of physiological parameters and to be able to compile, compare, contrast, and interpret physiological data related to exercise and environmental stresses. Laboratory demonstrations and exercises will explain by example, the lecture content.

125. Introduction to the Biomechanical Analysis of Human Movement. (4) Three hours of lecture and three hours of laboratory per week. Prerequisites: 131 and 131L: Physical Education 9. Basic biomechanical and anatomical concepts of human movement and their application to functional movements, exercise, and sport skills. Also listed as Physical Education 1C165. (F) Scott

126. Neuromuscular Fatigue. (3) Three hours of lecture per week. Prerequisites: 123A, 123AL, Formerly Human Biodynamics 108. An understanding of nerve and muscle excitation and muscle contraction, and changes occurring during fatigue and recovery.

127. Motor Control. (2) Two hours of lecture per week. Prerequisites: 131 or equivalent; a course in physiology (132, Molecular and Cell Biology 32, or equivalent). Must be taken concurrently with 127L. Control of human posture, locomotion, and voluntary movements. We start with control at the spinal level: how muscle mechanics, properties of muscle and skin receptors and simple reflexes permit control of a wide variety of movements. We then study the anatomy and physiology of motor systems of the brain. Finally, we use principles of control and information theories to synthesize knowledge of these elements to understand the control systems that regulate posture, locomotion, and voluntary movements. (F) Lehman

127L. Motor Control Laboratory. (1) Two hours of laboratory per week. Prerequisites: A course in human physiology (132 or equivalent); a course in physiology (132 or equivalent, Molecular and Cell Biology 132, or equivalent). Must be taken concurrently with 127. The laboratory component of 127 leads the students to develop of concepts and questions regarding control of human movements. Students are both investigators and subjects in hands-on experiments investigating the application of information the-
ory to fast, accurate movements, recruitment and rate coding of muscle force, electromyography, spinal reflexes, kinesiology, and sensorimotor response times. Other topics include elementary control of spinal reflexes, and neuromotor control of systems using computer simulations. The laboratory culminates with an independent investigation, in which students develop their own questions, conduct experiments, design and perform experiments, and present their studies in a symposium. Background in elementary statistics, data analysis and oral presentation are also provided. (SP) Staff

132. Anatomy Enrichment Program. (2) Course may be repeated for credit. Three hours of lecture and one hour of discussion per week. Prerequisites: 131 or 131A. Junior or senior standing, Biology 1A-1B, or consent of instructor. (SP) Staff

133. Anatomy Enrichment Program. (2) Course may be repeated for credit. Three hours of lecture and one hour of discussion per week. Prerequisites: Completion of one course in physical medicine including topics of athletic injury (cause, evaluation, and treatment options), exercise physiology, exercise and health, fitness testing, issues specific to female athletes, drug abuse in sports, environmental issues (heat, altitude, nutrition), and sport medicine. Introduction to clinical research. (SP) McLaughlin

C129. Human Physiological Assessment. (3) Two hours of lecture and three hours of laboratory per week. Prerequisites: 123A, 123AL or consent of instructor. Principles and theories of human physiological assessment in relation to physical activity and conditioning. Performance of laboratory procedures in the measurement and interpretation of physiological fitness (cardiorespiratory endurance, body composition, musculoskeletal fitness). Also listed as Physical Education C129. (SP) Johannessen

131. General Human Anatomy. (3) Three hours of lecture per week. Prerequisites: Biology 1A-1B or Chemistry 1A. The functional anatomy of the human body as revealed by gross and microscopic examination. Designed to be taken concurrently with 131L. (F) Diamond

131A. Applied Anatomy. (1) Course may be repeated once for credit. One hour of lecture per week. Must be taken on a passed/not passed basis. A series of 15 lectures by former students of 131 who have become successful physicians and surgeons. The purpose is to provide the practical applications of anatomy, e.g., plastic surgeons, neurosurgeons, vascular surgeons, pathologists, etc. (F) Diamond

131L General Human Anatomy Laboratory. (2) Four hours of laboratory per week. Prerequisites: Biology 1A-1B or Chemistry 1A, 131 (may be taken concurrently). Prepared human dissections, models, and microscopic slides. (F) Diamond

132. Survey of Human Physiology. (3) Students will receive no credit for 132 after taking Physiology 100 or 101. Three hours of lecture per week. Prerequisites: 131 or 131A. Principles of physiology. Three hours of lecture per week. Prerequisites: 131; Biology 1A. Mechanisms by which key physiological priorities are maintained in healthy humans. From a basis in cellular energetics and information processing, we will develop an understanding of homeostasis of cellular composition, structure, and energy metabolism. We then study neural and endocrine signaling in humans, and develop the key concepts of control and homeostasis in all the major organ and multi-organ systems, including cardiovascular, respiratory, renal, metabolic, reproductive, and immune systems, growth and development, and sensory and motor systems. (SP) Staff

132L Mammalian Physiology Laboratory. (2) Students will receive no credit for 132L after taking Mammalian and Cell Biology 32L or 136L, or if currently enrolled in similar courses. Three hours of laboratory per week. Prerequisites: Previous or concurrent enrollment in 132 or consent of instructor. In the introductory component of Integrative Biology 132, students gain hands-on experience measuring physiological parameters, interpreting physiological data, designing experiments and communicating ideas in writing and orally. Guided investigations include measurements of membrane potentials, responses of skeletal muscle to electrical stimulation, electromyography, pulmonary and cardiovascular responses in humans, coordination of sleep and wakefulness, and renal control of body fluids. In two independent investigations, students identify their own questions, develop hypotheses, design and perform experiments, and present their studies in symposia. Background in elementary statistics, data analysis and oral presentation are also provided. (SP) Staff

133. Anatomy Enrichment Program. (2) Course may be repeated for credit. Three hours of lecture and one hour of discussion per week. Prerequisites: 131 with a grade of A or A- in the course. The purpose of the course is for University of California students to study human anatomy to satisfy the prerequisites for C131 and to gain hands-on experience in the anatomy laboratory. The students in the course will divide into small independent groups of 2-3 to plan their presentations of the systems of the body and then enter the school rooms to teach what they have learned in 131L. (SP) Diamond

134. Principles of Microscopic Anatomy. (4) Three hours of lecture and three hours of laboratory per week. Prerequisites: Junior or senior standing, Biology 1A-1B. Concepts, issues, and practical approaches to analysis of design in living and fossil organisms. This course examines the fundamental questions and techniques of eight approaches to the study of structural diversity: descriptive morphology, comparative morphology, developmental morphology, functional morphology, macroevolutionary morphology, and evolutionary morphology. Examples from model systems and strong emphasis on the need for a pluralistic science of form integrating the disparate sub-disciplines.

135. The Mechanics of Organisms. (4) Three hours of lecture and three hours of discussion per week. Prerequisites: Introductory physics and biology recommended. Organism design in terms of mechanical principles; basics of fluid and solid mechanics with emphasis on understanding the dependence of mechanical behavior and locomotion on the structure of molecules, tissues, structural elements, whole organisms, and habitats. (SP) Dudley, Full, Koehl

137. General Endocrinology. (4) Three hours of lecture and one hour of discussion per week. Prerequisites: Biology 1A-B; human physiology (132) strongly recommended. Course will address the role of hormones in physiology with a focus on humans. Regulation of hormone secretion and mechanisms of hormone action will be discussed. Physiological processes to be addressed include reproduction, metabolism, water balance, growth, fetal development. Experimental and clinical approaches will be addressed. (SP) Physiology, ecological and evolutionary morphology. Examples from model systems and strong emphasis on the need for a pluralistic science of form integrating the disparate sub-disciplines.

138. Comparative Endocrinology. (4) Three hours of lecture and one hour of discussion per week. Prerequisites: Biology 1A-1B. Organic Chemistry recommended. The primary goal of this course is to provide students with a broad understanding of hormonal regulation in nonhuman vertebrate and invertebrate systems. In addition, students will gain an understanding of the experimental methods used in endocrine research. (SP) Bentley

140. Biology and Sociobiology of Human Reproduction. (4) Three hours of lecture and one hour of discussion per week. Prerequisites: A course in physiology (e.g., 132, Molecular and Cell Biology 32 or consent of instructor). Evaluation of human reproduction, social problems and demographics, anatomy and physiology of reproductive organs, endocrinology of the menstrual cycle; puberty, psycho-physiology of copulation and orgasm; fertilization and implantation infertility and sexual dysfunction; conception and contraception; amenorrhea and lactation; personality, sexual differentiation of brain and reproductive organs; homosexuality and transsexualism.

C142. Introduction to Human Osteology. (6) Three hours of lecture and fourteen hours of laboratory per week. Prerequisites: Anthropology 1, Biology 1B. An intensive study of the human skeleton, reconstruction of individual and population characteristics, emphasizing methodology and analysis of human populations from archaeological and paleontological contexts, taphonomy, and paleoanthropology. Also listed as Anthropology C142.

C143A. Biological Clocks: Physiology and Behavior. (3) Two hours of lecture and one hour of discussion per week. Prerequisites: Completion of biological prerequisites for the major and one of the following: Psychology 110 or a course in animal organismal biology (Integrative Biology 132, 140, 148, or Molecular and Cell Biology 140 or 142). Students will learn the biological clocks that generate daily, lunar, seasonal and annual rhythms in various animals including people. Emphasis on neuroendocrine substrates, development and adaptive significance of circadian rhythms, sleep, circadian, sleep-wake cycles, sexual cycles, sleep-wake cycles, body weight and migratory cycles. Also listed as Psychology C131.

C143B. Hormones and Behavior. (3) Two hours of lecture and one hour of discussion per week. Prerequisites: Completion of biological prerequisites for the major and one of the following: an understanding mammalian physiology recommended. This course provides a comprehensive overview of behavioral endocrinology beginning with hormone production and actions on target tissues and continuing with an exploration of a variety of behaviors and their hormonal regulation/sequences. The course uses a comparative approach to examine the reciprocal interactions between the neuroendocrine system and behavior, considering the effects of hormone development and adult behavior in addition to how behavior regulates endocrine physiology. While much of the course focuses on non-human vertebrate species, the relevance to humans is explored where appropriate. We will include sexual differentiation and sex differences in behavior, reproductive, parental, and aggressive behaviors, and hormonal and behavioral homeostatic regulation. Also listed as Psychology C116.

C144. Animal Behavior. (4) Students will receive no credit for 144 after taking 148 for three hours of lecture and one hour of discussion per week. Prerequisites: Biology 1A-1B or Environmental Science, Policy, and Management 140, Molecular and Cell Biology 140 or 142, 160 recommended. Formerly Psychology C115B. An introduction to animal behavior in an evolutionary context. Topics covered include the genetic, physiological, ecological, and cognitive bases for animal behavior. This course, which emphasizes conceptual approaches, covers basic behavioral principles, serves as the foundation for advanced courses in behavior offered through Integrative Biology and Psychology. Two midterms and a cumulative final exam. Also listed as Psychology C115B. (F) Staff

146. Behavioral Ecology. (3) Two hours of lecture and one hour of discussion per week. Prerequisites: C144. An in-depth examination of the ecological and evolutionary bases for behavioral diversity. Topics covered include behavior as an adaptive response, sexual selection, animal mating systems, and cooperative and competitive interactions. Current conceptual approaches to these topics are explored, with an emphasis upon rigorous testing of hypotheses using the primary literature. Discussion of specific sections are used to explore selected topics in greater depth and to stimulate critical review of recent research in behavioral ecology. Two midterms plus several discussion-based written assignments. Offered alternate years. (SP) Lacey

146L. Behavioral Ecology Laboratory. (2) Three hours of laboratory per week, plus one weekend field trip. Prerequisites: C144 or consent of instructor. Concurrent enrollment in 146. Hands-on training in the methods of experimental design, data collection, and data analysis currently used in behavioral research. In addition to structured laboratory activities, students design and execute multi-week studies on topics such as resource competition, mate choice, and alloparental care. Laboratory reports plus short written assignments. Offered alternate years. (SP) Lacey.

148. Comparative Animal Physiology. (3) Students will receive no credit for 148 after taking 100A. Three hours of lecture and one hour of discussion per week. Prerequisites: Biology 1A-1B. Comparative study of animal systems and their regulation. General physiological principles will be illustrated by examining variation in neural, muscular, endocrine, cardiovascular, respiratory, digestive, and osmoregulatory sys-
C149. Molecular Ecology. (4) Students will receive no credit for C149 if they took 149 prior to spring 2003. Three hours of lecture and one hour of discussion per week. Prerequisite: 149 (may be taken concurrently) or consent of instructor. Formerly 149L. This course focuses on the use of molecular genetic information in ecology. Applications include range restriction of parental and relatedness (DNA fingerprinting and multilocus genetic analysis) through gene flow, biogeographic history and community composition (comparative SNV sequencing) to analysis of diet and trophic interactions (biological isolates). Grades are based on final exam, problem sheets, and a critique of a recent research paper. Also listed as Environ Sci, Policy, and Management C149. Offered alternate years.

C149L. Molecular Ecology Laboratory. (2) Six hours of laboratory per week. Prerequisite: 149 (may be taken concurrently) or consent of instructor. Formerly 149L. This laboratory course is intended to provide hands-on training in techniques commonly used in molecular ecology and systematics. Techniques to be covered include DNA extraction, agarose gel electrophoresis, PCR amplification, RFLP and AFLP analysis, DNA sequencing and screening. An in-depth basis of each technique will be discussed. Students will also gain experience in the analysis and interpretation of these types of genetic data. During the latter part of the laboratory students will work in small groups to complete an independent research project and present the results to the class. Grades will be based on laboratory notebooks, homework assignments, and independent projects. Also listed as Environ Sci, Policy, and Management C149L. Offered alternate years.

151. Plant Physiological Ecology. (3) Three hours of lecture per week. Prerequisite: Biology 1B or consent of instructor (an introductory course in ecology, plant physiology, and biochemistry is very helpful). This course is designed to tie the physiological approaches used in understanding the relationships between plants and their environment from the functional perspective. Lectures explore physiological adaptation; limiting factors; resources acquisition and allocation; photosynthesis, carbon, and energy balance; water use and water relations; nutrient relations; linking physiology; stable isotope applications in ecophysiology; stress physiology; life history and physiology; the evolution of physiological performance; and physiology of the population, community, and ecosystem levels. (SP) Dawson

151L. Plant Physiological Ecology Laboratory. (2) Five hours of laboratory per week, plus one weekend field trip is required. Prerequisite: Consent of instructor. Formerly 151L. The purpose of the laboratory is to allow you to become familiar with the approaches and methodology used in plant physiology ecology. The course will introduce students to a number of techniques and make measurements on different plant species growing in the field or greenhouse. Offered alternate odd years. (SP) Dawson

152. Environmental Toxicology. (4) Three hours of lecture and one hour of discussion per week. Prerequisite: 110 or consent of instructor. Prerequisites: C163, 161, or Molecular and Cell Biology C142. This course is designed to introduce students to the environmental fate and effect of toxic substances from human activities, with emphasis on aquatic systems, including their biological effects from the molecular to the community level. Contaminant types, primary sources, impacts on aquatic organisms, monitoring approaches, and regulatory issues. (SP) Dawson

153. Population and Community Ecology. (3) Three hours of lecture and one hour of discussion per week. Prerequisite: Biology 1B or consent of instructor. Prerequisites: C163, 161, or Molecular and Cell Biology C142 (may be taken concurrently), or consent of instructor. Formerly 153. This course focuses on the use of molecular genetic information in ecology. Applications include range restriction of parental and relatedness (DNA fingerprinting and multilocus genetic analysis) through gene flow, biogeographic history and community composition (comparative SNV sequencing) to analysis of diet and trophic interactions (biological isolates). Grades are based on final exam, problem sheets, and a critique of a recent research paper. Also listed as Environ Sci, Policy, and Management C149. Offered alternate years.

154. Population and Community Ecology. (3) Two hours of lecture and one hour of discussion per week. Prerequisite: Biology 1B or consent of instructor. This course focuses on the use of molecular genetic information in ecology. Applications include range restriction of parental and relatedness (DNA fingerprinting and multilocus genetic analysis) through gene flow, biogeographic history and community composition (comparative SNV sequencing) to analysis of diet and trophic interactions (biological isolates). Grades are based on final exam, problem sheets, and a critique of a recent research paper. Also listed as Environ Sci, Policy, and Management C149. Offered alternate years.

154L. Laboratory in Population and Community Ecology. (2) Four hours of laboratory per week and two or three 1-day field trips. Prerequisite: Biology 1B. Must be taken concurrently with 154. Laboratory for 154.

156. Evolution. (4) Three hours of lecture and one hour of discussion per week. Prerequisites: Biology 1B. An analysis of the patterns and processes of organic evolution: historical and philosophical. Course activities will focus on the different lines of evidence and fields of inquiry that bear on the understanding of evolution. The major features and processes of evolution through geologic time; the generation of new forms and new lineages; extinction, population processes (growth, competition, predation, and other forces; genetics, genomics, and the molecular basis of evolution; evolutionary development biology; sexual selection; behavioral evolution; applications of evolutionary biology to medical, agricultural, conservation, and anthropological research. (F) Boone, Moiritz, Padian

162. Ecological Genetics. (4) Three hours of lecture and one hour of discussion per week. Prerequisites: Biology 1B. This course integrates ecology, genetics, and evolutionary biology. It presents contemporary approaches to studying evolution in natural populations, including analyzing heritability of ecologically important traits, using molecular techniques to decompose genotypes, documenting and measuring the magnitude of selection in natural systems, and using models to predict evolution in natural populations. Case studies are used to examine evolutionary effects of ecological interactions among organisms, the importance of population size and structure, and interactions among populations through migration and gene flow. (SP) Barnosky

C153. Survey of General Genetics. (4) Students will receive no credit for C163 or Molecular Cell Biology C142 after taking 141 or Molecular Cell Biology 140. Three hours of lecture and one hour of discussion per week. Prerequisites: Biology 1A-1B or consent of instructor. Recommended: Chemistry 3A-3B or equivalent. Formerly Molecular and Cell Biology 142. A survey of genetics with primary emphasis upon mechanisms of heredity and molecular genetics. Includes some treatments of evolutionary genetics. Formerly Molecular and Cell Biology C142. (F) Beckendorf, Calendar

165. Introduction to Quantitative Genetics. (4) Two hours of lecture, one hour of discussion, and one hour of computer laboratory per week. Prerequisites: Biology 1B, or consent of instructor. Formerly Molecular and Cell Biology 142. An introduction to multiple quantitative traits, genetics effects from the molecular to the community level, and the use of molecular genetic information in ecology. Applications of evolutionary biology to medical, agricultural, conservation, and anthropological research. (SP) Bosnic

C154. Principles of Conservation Biology. (4) Three hours of lecture and one and one-half hours of discussion per week. Prerequisites: Biology 1A-1B or equivalent. A survey of the principles and practices of conservation biology. Factors that affect the creation, destruction, and distribution of biological diversity at the level of the population are examined. Tools and management options derived from ecology and evolutionary biology that can recover or prevent the loss of biological diversity are explored. Also listed as Environ Sci, Policy, and Management C103. (F,SP) Beissinger

157L. Ecosystems of California. (6) Six hours of field work per week. Prerequisites: Biology 1B or consent of instructor. Formerly 157L. In this field-oriented course, we will visit sites representative of diverse grassland, chaparral, scrub land, forest, desert, river, marsh, and intertidal ecosystems. During a second meeting on campus, we will spend two or three 1-day field trips. Prerequisites: Biology 1B. Must be taken concurrently with 154. Laboratory for 154.

C163. Survey of General Genetics. (4) Students will receive no credit for C163 or Molecular Cell Biology C142 after taking 141 or Molecular Cell Biology 140. Three hours of lecture and one hour of discussion per week. Prerequisites: Biology 1A-1B or consent of instructor. Recommended: Chemistry 3A-3B or equivalent. Formerly Molecular and Cell Biology 142. A survey of genetics with primary emphasis upon mechanisms of heredity and molecular genetics. Includes some treatments of evolutionary genetics. Formerly Molecular and Cell Biology C142. (F) Beckendorf, Calendar

166. Evolutionary Biogeography. (4) Three hours of lecture and one hour of discussion per week. Prerequisites: Biology 1B, 11, Geography 148 or Earth and Planetary Science 50. The goals of the course are to (a) examine how geographically-linked characteristics of species influence their potential for evolution and extinction; and (b) provide an overview of the analytical techniques and applications for studying the interplay between biogeographic ranges, environment, evolution, and extinction. Accordingly, the course begins by examining what geographic ranges of species are and what controls them. We will then explore how geographic range characteristics interact with speciation and extinction processes. With that foundation, we will examine how species assemble into communities and how ecological processes govern distributions at the community and landscape levels, touching on such topics as community energetics, scaling issues, and the influences of humans on "natural" ecosystems. The last third of the course will be devoted to an overview of quantitative analytical techniques that are commonly used to study interactions between biogeographic ranges, evolutionary processes, extinction, and environmental change. (SP) Barnosky
167. Astrobiology. (3) Three hours of lecture per week. Formerly Letters and Science 117. The course covers scientific search for life in the universe, including habitability and process; the philosophy and scientific method of the search for extraterrestrial life; the history and philosophy of the search for life in the universe, and the role of SETI. (SP Baldwin)

168. Systematics of Vascular Plants. (2) Two hours of lecture per week. Prerequisites: Biology 1A-1B. Must be taken concurrently with 168L. A discussion of the philosophy of phylogenetics, systematics, and classification of plants. The course will focus on the use of molecular and phylogenetic data to construct phylogenies. (SP Baldwin)

173. Mammalogy. (2) Two hours of lecture per week. Prerequisites: 104, 173L. Must be taken concurrently. An advanced course in the biology of mammals. Topics include evolutionary morphology, reproduction, systematics, and behavior. (SP Baldwin)

174. Ornithology. (2) Two hours of lecture per week. Prerequisites: 104 or consent of instructor. An advanced course in the biology of birds. (SP Baldwin)

175. Herpetology. (2) Two hours of lecture per week. Prerequisites: 104, 175L. Must be taken concurrently. Lectures and assigned readings will introduce students to the diversity of amphibians and reptiles on a worldwide scale, with emphasis on systematics, ecology, morphology, and life history. (SP Baldwin)

184. Morphology of the Vertebrate Skeleton. (2) Two hours of lecture per week. Prerequisites: 30, 33, or 43. The course will examine the evolution of the vertebrate skeleton. Topics include functional anatomy, osteology, and behavior. The course will be offered every other year. (SP Baldwin)

186. Evolution of Hominid Behavior. (4) Three hours of lecture and one hour of discussion per week. Prerequisites: Biology 1A or Anthropology 1 and Anthropology 2. The course will examine the evolution of hominid behavior. (SP Baldwin)

194. Undergraduate Student Instructor for Integrative Biology Courses. (1-3) Course may be repeated for credit. Three to four hours of lecture, plus field work, per week. Prerequisites: Must be taken concurrently with 194. An introduction to the diversity, morphology, and general ecology of birds of the world. (SP Baldwin)

195. Herpetology Laboratory. (2) Two hours of laboratory per week, plus two weekend field trips. Prerequisites: Must be taken concurrently with 195. An introduction to herpetology and field course that explores the biology of modern amphibians. (SP Baldwin)

196. Evolution of Hominid Behavior Review. (1) Three hours of lecture per week. Prerequisites: Anthropology 1A or Anthropology 1B. The course will review the human evolution of hominid behavior. (SP Baldwin)

197. Supervised Field Studies by Upper-Division Students. (1-4) Course may be repeated for credit. Three to four hours of laboratory per week. Prerequisites: Biology 1A, 1B, or 1B-1B. Must be taken on a passed/not passed basis. Formerly Paleontology 197. (SP Baldwin)

198. Supervised Group Study and Research by Upper-Division Students. (1-4) Course may be repeated for credit. Three to four hours of laboratory per week. Prerequisites: Biology 1A-1B. Must be taken on a passed/not passed basis. Formerly Paleontology 198. (SP Baldwin)

200. Principles of Phylogenetics: Ecology and Evolution. (4) Three hours of lecture and three hours of laboratory per week. The course will cover the use of phylogenetic methods to analyze ecological and evolutionary processes. (SP Baldwin)

201. Communicating Ocean Science. (3) Three hours of lecture per week. Prerequisites: Consent of instructor. The course will cover the review and analysis of ocean science literature, including the identification of trends and patterns in ocean science. (SP Baldwin)

202. Integrative Biology / 313. Three hours of lecture per week. Prerequisites: Must be taken concurrently with 201. A course in introductory biology for students interested in pursuing careers in science and technology. (SP Baldwin)

203. Advanced Phylogenetics. (4) Three hours of lecture and three hours of laboratory per week. Prerequisites: Graduate standing in biology or related field. The course will cover the use of phylogenetic methods to analyze ecological and evolutionary processes. (SP Baldwin)

204. Quantitative Methods for Ecological and Environmental Modeling. (3) Three hours of lecture, plus field work. Prerequisites: Must be taken concurrently with 204. A course in introductory biology for students interested in pursuing careers in science and technology. (SP Baldwin)
222. Seminar in Locomotion Energetics and Biomechanics. (2) Two hours of seminar per week. Prerequisites: 123A, 123AL. Formerly Human Biodynamics 205. Immediate and long-range adaptation of energy to exercise. Emphasis on physiological limits and work capacities in relation to age, sex, diet, environmental factors, and nature of activity.

225. Seminar in Motor Control. (2) Course may be repeated for credit. Two hours of seminar per week. Prerequisites: 127, 127L. Formerly Human Biodynamics 210. The many facets of human movements, including appropriate engineering analogs. Morphology, scaling, and simple voluntary movements. Critical review of current literature in motor control. (F) Lehman

226. Isotopics. (2) Three hours of seminar for ten weeks. Must be taken on a satisfactory/unsatisfactory basis. This seminar will explore current topics that employ the use of stable isotopes. Discussion topics include: the areas of biology, paleontology, biogeochemistry, soil science, and atmospheric science. Students will be expected to present their research and will be graded on their understanding of relevant literature in the topic area. Also listed as Environ Sci, Policy, and Management C225. (F) Amundson, Dawood, Mambelli

227. Isotope Biogeochemistry. (3) Three hours of lecture and three hours of laboratory per week. Prerequisites: Consent of instructor. Use of isotopic analysis to describe and analyze historical, recent, and current biogeochemical processes. Use of isotopic analysis to study the field of climate change. (SP) Diamond

230. Marine Science Review. (1) One hour of seminar per week. Must be taken on a satisfactory/unsatisfactory basis. Prerequisites: Senior or graduate standing; consent of instructor. Reports and discussion of original research in marine science.

232. Seminar in Biomechanics. (2) Course may be repeated for credit. Two hours of seminar per week. Must be taken on a satisfactory/unsatisfactory basis. Prerequisites: Consent of instructor. Presentation, discussion, and critique of current literature in scientific research and critical topics in comparative biomechanics which include solid and fluid mechanics, locomotion, and energetics. (F,SP) Staff

234. Seminar on Biology of Amphibians and Reptiles. (1) Course may be repeated for credit. Two hours of seminar every other week. Must be taken on a satisfactory/unsatisfactory basis. Prerequisites: Gradate standing and consent of instructor. Formerly Zoology 265. Review of current research activity and literature concerning the biology of amphibians and reptiles. (F,SP) Staff

237. Advanced Studies in Morphology. (2) Course may be repeated for credit. Two hours of seminar per week. Must be taken on a satisfactory/unsatisfactory basis. Prerequisites: Graduate standing and consent of instructor. Formerly Zoology 264. Presentations of results of original research by students, faculty, and visitors. (F,SP) Staff

240. Stress Effects on Brain and Behavior. (3) Three hours of lecture per week. Prerequisites: Consent of instructor. This course will describe the impact of stress, hormones, and behavior on the brain and behavior. We will also evaluate endocrine disrupting pollutants and their effects on the brain, including their potential role in cancer. (SP) Hayes

254. Seminar in Ecology. (1) Two hours of seminar per week. Prerequisites: Consent of instructor. Formerly Zoology 261. Seminar will cover the methods used in presenting and documenting ecological data, computational modeling, and ecological modeling and on analyzing ecological models and on experimental approaches to testing the predictions of theory.

256. Methods in Ecology and Environmental Biology. (3) One hour of lecture and two hours of laboratory per week. Must be taken on a satisfactory/unsatisfactory basis. Prerequisites: Course work in biology or consent of instructor. This course will introduce students to the diversity of methods and techniques used in ecological and environmental biology. It will focus on major areas of research such as environmental science, population and community ecology, environmental physiology, and ecosystem ecology. In particular, we will examine various approaches to addressing research questions, including case studies of the effects of anthropogenic changes, the components and functions of biodiversity, the interactions among organisms and between organisms and their environments, and the major biogeochemical cycles. Each topic will be analyzed from a theoretical and an empirical—practical perspective during the weekly sessions.

257. Current Topics in Behavioral Physiology. (2) Course may be repeated for credit. Two hours of seminar per week. Prerequisites: C144 or consent of instructor. Topics to vary. Report and discussion of current literature.

257A. Symposium in Behavioral Ecology. (1) One hour of seminar per week, plus one weekend trip to Hastings Beach Reservation. Must be taken on a satisfactory/unsatisfactory basis. Prerequisites: Consent of instructor. Students will each select a related topic in the field of behavioral ecology and explore in detail the current issues of interest and point of view for further study. Oral presentation focusing on chosen topics will be presented during a weekend symposium at Hastings Beach Reservation. Discussions include consideration of field and experimental statistical analysis, application of implications, and further directions related to the selected problem. (SP) Koening

259. Advanced Paleoecology. (2) Course may be repeated for credit. Two hours of seminar per week. Prerequisites: Consent of instructor. Formerly Paleontology 243. Topics vary from year to year but will include paleoecology of major groups of organisms or major environments from population, community evolution, anatomy, or taxonomic perspectives.


263. Genetics and the Evolution of the Skeleton. (2) Course may be repeated for credit. One hour of seminar per week. Prerequisites: Consent of instructor. Formerly Paleontology 245 and Anatomy 203. Development, structural (gross and microscopic) and functional relationships of the mammalian central nervous system. (SP) Diamond

264. Seminar in Evolutionary Biology of the Vertebrates. (2) Course may be repeated for credit. One hour of seminar per week. Must be taken on a satisfactory/unsatisfactory basis. Prerequisites: Consent of instructor. Formerly Zoology 254. Recent developments in evolutionary ge- netics will be discussed in a seminar format.

265. Seminar in Ecology and Environmental Biology. (3) One hour of seminar per week. Prerequisites: Consent of instructor. Review of current theoretical topics in population and community ecology. emphasis will be placed on quantitative techniques for developing and analyzing ecological models and on experimental approaches to testing the predictions of theory.

266. Methods in Ecology and Environmental Biology. (3) One hour of lecture and two hours of laboratory per week. Must be taken on a satisfactory/unsatisfactory basis. Prerequisites: Course work in biology or consent of instructor. This course will introduce students to the diversity of methods and techniques used in ecological and environmental biology. It will focus on major areas of research such as environmental science, population and community ecology, environmental physiology, and ecosystem ecology. In particular, we will examine various approaches to addressing research questions, including case studies of the effects of anthropogenic changes, the components and functions of biodiversity, the interactions among organisms and between organisms and their environments, and the major biogeochemical cycles. Each topic will be analyzed from a theoretical and an empirical—practical perspective during the weekly sessions.

267. Current Topics in Behavioral Physiology. (2) Course may be repeated for credit. Two hours of seminar per week. Prerequisites: C144 or consent of instructor. Topics to vary. Report and discussion of current literature.

267A. Symposium in Behavioral Ecology. (1) One hour of seminar per week, plus one weekend trip to Hastings Beach Reservation. Must be taken on a satisfactory/unsatisfactory basis. Prerequisites: Consent of instructor. Students will each select a related topic in the field of behavioral ecology and explore in detail the current issues of interest and point of view for further study. Oral presentation focusing on chosen topics will be presented during a weekend symposium at Hast- ings Beach Reservation. Discussions include consideration of field and experimental statistical analysis, application of implications, and further directions related to the selected problem. (SP) Koening

269. Advanced Paleoecology. (2) Course may be repeated for credit. Two hours of seminar per week. Prerequisites: Consent of instructor. Formerly Paleontology 243. Topics vary from year to year but will include paleoecology of major groups of organisms or major environments from population, community evolution, anatomy, or taxonomic perspectives.

273. Genetics and the Evolution of the Skeleton. (2) Course may be repeated for credit. One hour of seminar per week. Prerequisites: Consent of instructor. Formerly Paleontology 245 and Anatomy 203. Development, structural (gross and microscopic) and functional relationships of the mammalian central nervous system. (SP) Diamond

274. Seminar in Evolutionary Biology of the Vertebrates. (2) Course may be repeated for credit. One hour of seminar per week. Must be taken on a satisfactory/unsatisfactory basis. Prerequisites: Consent of instructor. Formerly Zoology 254. Recent developments in evolutionary genetics will be discussed in a seminar format.
C266. Mechanisms of Developmental Evolution. (3)
Three hours of lecture and one hour of discussion per week. Prerequisites: Graduate standing or upper division in the major with consent of instructor. Synthesis of modern research on the molecular genetics of developmental evolution. Topics include the origin of animals, the evolution of body plan, the role of tran- soduction, morphological evolution, and genome evolution. Also listed as Molecular and Cell Biology C245. (SP) King, Levine, Patel

268. Seminar in Evolution above the Species Level. (2)
Course may be repeated for credit. Two hours of seminar per week. Formerly Paleontology 246. Current issues in macroevolution and paleobiology, using both neontological and paleontological data.

C271. Modeling Ecological and Morphological Phenomena. (3)
Three hours of lecture per week. Prerequisites: Graduate standing; consent of instructor. Presentation of results of original research by students, faculty, and visitors.

280. Seminar in Paleontological Research. (1)
One hour of seminar per week. Must be taken on a satisfactory/unsatisfactory basis. Prerequisites: Graduate standing.

281. Seminar in Evolution. (2)
Two hours of seminar per week. Must be taken on a satisfactory/unsatisfactory basis. Prerequisites: Graduate standing. Credit awarded according to work planned and accomplished.

C601. Individual Study for Master’s Students. (1-8)
Course may be repeated for credit. Individual conferences. Must be taken on a satisfactory/unsatisfactory basis. Prerequisites: Consent of instructor. Staff

602. Individual Study for Doctoral Students. (1-6)
Course may be repeated for credit. Individual conferences. Must be taken on a satisfactory/unsatisfactory basis. Prerequisites: Consent of instructor. Staff

IDS 282. Tumor Biology Seminar. (1)
Course may be repeated for credit. One hour of seminar per week. Must be taken on a satisfactory/unsatisfactory basis. Prerequisites: Consent of instructor. Reviews and reports of current research in tumor biology. Sponsoring departments: Integrative Biology and Molecular Cell Biology.

Interdepartmental Studies Courses
Graduate Courses

Interdepartmental Studies Courses
(Special Studies)

Interdepartmental Studies Courses are sponsored by two or more departments because the content of each course transcends the boundaries of individual departments. Each class is taught by one or more instructors who represent the departments sponsoring the class. For further information, please contact the sponsoring departments.

Note: Many IDS courses that formerly appeared in this section are no longer taught and have been withdrawn. Some of them, however, have equivalents that are now listed in the sponsoring departments. See individual departmental course listings for further information.

Upper Division Courses

100AC. Technology and the American Experience. (4)
Three hours of lecture and one hour of discussion per week. The history of technology in America and the role of technology in the experience, philosophy, and culture of different American groups. The technological practices and attitudes of Native Americans and of European Americans before 1700. Technological clashes, transfers, and dialogues between different American Cultures. Technology and the republic and pastoral ideals. The relationship of slavery and technology. The industrial and agricultural revolutions: winners and losers. Immigration and technological progress in the 20th century in the United States and the global village. Sponsoring departments: Engineering (Interdisciplinary Studies and History. This course satisfies the American Cultures requirement. (SP)

114A-114B. Advances in Aging. (2,2) Course may be repeated for credit. Two hours of lecture per week. Prerequisites: High school biology. This interdisciplinary course will single out specific topics in aging of great current interest and present lectures on several aspects of each topic (biomedical, health, socio-economic, legal, and ethical). Each semester a different topic will be presented. Invited speakers with special expertise in these areas will participate. Sponsoring departments: Molecular and Cell Biology, Optometry, Public Health, and Social Welfare. (F,SP) Timiras

170. Economics of Organization. (3)
Three hours of lecture per week. Prerequisites: Economics 100 or 101; Business Administration 110 or equivalent; consent of instructor. The course presents economics principles which explain why economic activity is organized in firms, why firms are vertically integrated, and why there are limits to the growth of firms. Other forms of economic organization, such as the partnership, the labor-managed firm, and the cooperative ventures, will also be considered. Sponsoring departments: Business Administration and Economics. (SP)

Graduate Courses

282. Tumor Biology Seminar. (1)
Course may be repeated for credit. One hour of seminar per week. Must be taken on a satisfactory/unsatisfactory basis. Pre-
Interdisciplinary Studies
(College of Letters and Science)

Field Major Office: Undergraduate and Interdisciplinary Studies, 301 Campbell, (510) 642-9320
www.is.berkeley.edu/ugis/isf

Director: Renate Holub, Ph.D.

Professors
Renate Holub, Ph.D. (Director, ISF: European Studies; Intellectuals and Global Studies)
Richard E. Hutton, Ph.D. (English; Psychoanalysis; Cultural Studies; American Studies)
Karin L. Sanders (Scandinavian)
Paul Thomas (Political Science)
Richard Walker (Economic and Urban Geography)

Lecturers
Urs Cipolat, Ph.D.
Robert Ehrlich, Ph.D.
Earl Klee, Ph.D.
Gary P. Wren, Ph.D.

Affiliated Faculty
Nizar Al-Sayay (Architecture; Director, Center for Middle Eastern Studies)
Larry Downes (School of Information)
Jerome Fleurant (Chinese and Comparative Society; Cognitive Science and Society)
Gillian Hart (Economic Development; Director, Center for African Studies)
David Hollinger (History; U.S. Intellectual History)
Andrew Janos (Political Science; European Studies; Eastern Europe)
Beatriz Manz (Geography; Ethnic Studies; Latin American Studies)
Nancy Scheppe-Hughes (Anthropology; Critical Studies in Medicine)
Harley Shasky (Director, Center for Latin American Studies)
Richard Steinhardt (Biological Sciences; Molecular and Cell Biology)
Pravin Varaiya (Electrical Engineering; Urban Economics and Computer Sciences)
Michael Walker, C200C. Word and Image. (4)
Oliver Williams (Economics and Haas School of Business)
Guy Benveniste (Emeritus), (Education, Engineering; Art)
Manuel Castells (Emeritus), (Urban and Regional Planning; Sociology and Global Studies)

Faculty Advisers: A list of faculty advisers is available in the main office or on the Interdisciplinary Studies web site.

Student Affairs Officer
Student Affairs Officer: Dawn Stroung

The Interdisciplinary Studies Field (ISF) Major

Note: Please go to is.berkeley.edu/ugis/isf for the most up-to-date information about the major.

The ISF major offers a capstone experience in that all students will research and write a substantive thesis. The research program must meet three criteria:

• First, it must be interdisciplinary. This means that the research area must integrate approaches from at least three fields or disciplines. The purpose of the ISF major is to enable research interests of undergraduates in areas in which no formal program exists.

• Second, the research area must not replicate an existing major. The purpose of the ISF major is to enable research interests of undergraduates in areas in which no formal program exists.

• Third, the area of research must be feasible. Each student’s proposed research program must be discussed with a faculty adviser to make sure that the range and number of courses required will be available.

The field major is administered by a faculty advisory committee and is one of the programs of the Office of Undergraduate and Interdisciplinary Studies.

Admission to the Major.

Students should apply to the major at the beginning of their junior year. Students will be considered for the Interdisciplinary Studies Field major on the basis of the appropriateness of their proposed area of research, the quality of their previous work in relevant courses, and their overall promise for interdisciplinary work. Candidates for the major should discuss their individual research proposal with an ISF faculty member before submitting an application. Applications will be accepted throughout the semester.

Lower Division Requirements.

One year (two courses) of World Civilization. Courses that may be used to fulfill the requirement are listed on the ISF student handbook, which is available on the ISF web page or outside 301 Campbell Hall. World Civilization equivalents may be discussed with ISF faculty advisers. The World Civilization requirement must be taken for a letter grade.

Upper Division Requirements.

30 units distributed among the following:

1. Area of Research. A minimum of 20 units (at least six courses) drawn at least six courses from three fields or disciplines. Examples of research areas are available in the ISF student handbook. Courses for this requirement must be upper division, i.e., numbered 100 or above.

2. Core Theory and Methodology Courses. Students in the major take the following three courses: ISF 100A (Introduction to Social Theory and Cultural Analysis), ISF 100B (Introduction to Social Theory and Cultural Analysis), ISF 100C (Introduction to Technology, Society and Culture), or ISF 100E (The Globalization of Rights, Values, and Laws in the 21st Century).

3. Thesis Requirement. ISF 190, Senior Thesis. Research and writing of a senior thesis (30-40 pages) that pertains to the student’s area of research.

4. Thesis Requirement in the Honors Program. ISF H195, Seniors Honors Thesis. Requirements for graduation in the honors program include: (1) 3.5 overall grade point average and 3.6 in ISF, (2) successful completion of honors thesis (60-80 pages). Honors candidates will submit to their thesis adviser a detailed proposal, a working bibliography, and a completed honors thesis. Honors candidates will also contact an additional Berkeley faculty member or an appropriate member of the ISF advisory board for purposes of reading and evaluating the completed honors thesis.

Lower Division Courses

60. Technology and Values in the Global Arena. (3) Three hours of lecture per week. In recent years, the pace of international transfers of technology, funds, resources, information, and even populations has increased dramatically. This cross-cultural diffusion has raised complex and interesting moral issues, issues which this course seeks to explore. We will examine some of the emergent ethical issues in international affairs, with particular attention to those involving technology, development and construction of social life. Using some of the “classical” traditions of social theory as well as some examples of contemporary analysis, this course will explore such topics as the nature of power and social/historical change, the nature of economic production and consumption, the meaning of difference, sexual, cultural development of institutions, etc. (F,SP) Holub, Wren, Ehrlich, Klee, Cipola

100B. Introduction to Social Theory and Cultural Analysis. (4) Three to four hours of lecture analysis once a week. In recent years, the pace of international transfers of technology, funds, resources, information, and even populations has increased dramatically. This cross-cultural diffusion has raised complex and interesting moral issues, issues which this course seeks to explore. We will examine some of the emergent ethical issues in international affairs, with particular attention to those involving technology, development and construction of social life. Using some of the “classical” traditions of social theory as well as some examples of contemporary analysis, this course will explore such topics as the nature of power and social/historical change, the nature of economic production and consumption, the meaning of difference, sexual, cultural development of institutions, etc. (F,SP) Holub, Wren, Ehrlich, Klee, Cipola

C100C. Word and Image. (4) Three hours of lecture per week. This course is designed to sharpen our skills in understanding what happens when the world of images and words meet. Starting with the work from the Western “classical” traditions we want to encourage the learning of critical thinking skills. This includes the ability to systematically evaluate information and competing moral claims. Also, it is intended as an exposure to the interdisciplinary approach. That is, how can different perspectives illuminate the same issue? With this in mind the course draws on important work from philosophy and ethics, social psychology, jurisprudential analysis, historical-political accounts, and personal memoirs.
In this course, we will trace some of the sub-disciplines in Anthropology, Social Welfare, Peace and Energy and Resources Group. Entails writing a bachelor's thesis pertaining to the student's individual area of study (Anthropology, Economics, History, Political Science, Policy, and Management), (Graduate Program Office: 101 Stephens Hall, iasma@berkeley.edu).

C145. Multicultural Europe. (4) Three hours of lecture per week. Formerly Interdisciplinary Field Studies 145. In this course, we will trace some of the sub-disciplines in Anthropology, Social Welfare, Peace and Energy and Resources Group. Entails writing a bachelor's thesis pertaining to the student's individual area of study (Anthropology, Economics, History, Political Science, Policy, and Management), (Graduate Program Office: 101 Stephens Hall, iasma@berkeley.edu).

100D. Introduction to Technology, Society, and Culture. (4) Three hours of lecture and one hour of discussion per week. This course surveys the technological changes in the 19th and 20th centuries, it then focuses on the development of the computer and the Internet. The final part examines the impact of the Internet on social movements. (F,SP)

100E. The Globalization of Rights, Values, and Laws in the 21st Century. (4) Fours hours of lecture per week. This interdisciplinary course is an introduction to the complex interplay of transnational values, international rights and legal institutions that increasingly govern social, cultural and geopolit.

International and Area Studies, (Graduate Division) Office: 101 Stephens Hall, iasma@berkeley.edu, ias.berkeley.edu/lastsp2006/Programs.asp Chair: Ananya Roy (City and Regional Planning)

Program Overview

International and Area Studies attempts to enhance the educational experience at the undergraduate and graduate levels. The courses that make up ISAS offerings are often internationally focused, and they address timely and relevant issues not generally covered in existing campus courses. The courses are designed to be of interest to students of all majors. Since the course topics change from semester to semester, please consult with the program office regarding the current offerings.

Graduate Program

Advisers: Vinod K. Aggarwal (Political Science), Nezar Alsayyad (Architecture), Max Auffhammer (Agriculture and Resource Economics), Michael Austin (Social Welfare), Jill Duerr Berrick (Social Welfare), Richard Buxbaum (Law), Margaret Chowning (History), David Cohen (Classics/Rhetoric), David Collillier (Political Science), Alain de Janvry (Agriculture and Resource Economics), Brad Devereux (Economics), Elinor Ostrom (Economics), Elizabeth Kraft (Geography), Ron Hassner (Political Science), David Hestevold (Eco.

M.A. Degree. The M.A. Degree Program in international issues and area studies is a two-year master's program for students already matriculated in one of Berkeley's professional or academic graduate programs. A broadly defined and interdisciplinary program, it is designed to complement other degree awarded by providing the fundamentals of contemporary international issues and detailed knowledge of particular world regions or countries. Students will complete a major in the contemporary international issues field major within a defined framework to suit their interests. Specific coursework is chosen in consultation with a faculty adviser.

Eligibility. Any Berkeley student currently enrolled in a master's or Ph.D. program is eligible to apply.
Topics-oriented (F,SP)

This course is a response to the increasing multiculturization of Europe. It begins with the ancient civilizations. It focuses on benchmarks of the history of various nations, and characteristics of contemporary international developments since the 15th century. The purpose of this course is geared towards intended PEIS and Development Studies majors. It consists of a series of guest lectures presenting different issues and perspectives of political, economic and environmental topics. The topics will be divided into three general areas: (1) theories on political economy and development; (2) historical background on the causes and effects of politics and markets; and (3) case studies on both the international and domestic levels. The discussion groups are led by honors students. (SP)

Upper Division Courses

102. Scope and Methods of Research in International and Area Studies. (3) Three hours of lecture and one hour of discussion per week. Formerly Political Economy of Industrial Societies 102. Required prerequisite for all students intending to enroll in Development Studies H195 and Political Economy of Industrial Societies H195. Introduction to interdisciplinary research strategies for the collection, interpretation, and analysis of data. Course integrates the study of the fundamental theories of social science with the practical techniques of social science research methods. (F,SP)

106. Intermediate Microeconomic Theory. (4) Students will receive no credit for 106 after taking Economics 100A, 101A, Business Administration 110, Undergraduate Business Administration 101A, and Environmental Economics and Policy 100. Three hours of lecture and one hour of discussion per week. Prerequisites: Economics 1 or equivalent. This course is designed as a comprehensive overview of intermediate microeconomic theory. It covers a number of topics including consumer and demand theory, firm, production and cost theory, competitive market theory, imperfect competition, welfare economics, choice under uncertainty and uncertainty. All analysis conducted in the course relies on graphical and algebraic techniques. Outside readings and discussion sections will demonstrate the applicability of the models covered in class to topics with an international dimension, such as the setting of tariffs, cartel behavior, and international trade. (F,SP) Auffhammer

107. Intermediate Macroeconomic Theory. (4) Students will receive no credit for 107 after taking Economics 100B, 101B, Business Administration 111, Undergraduate Business Administration 101BA. Three hours of lecture and one hour of discussion per week. Prerequisites: Economics 1 or equivalent. This course is designed as a comprehensive overview of intermediate macroeconomic theory focusing on economic growth and international economics. It covers a number of topics including history of economic growth, industrial revolution, post-industrial revolution divergence, flexible-price and sticky-price macroeconomic policy. Course is structured for majors in International and Area Studies and other non-economic social science majors. (F,SP) Hsieh

115. Global Poverty: Hopes and Challenges in the New Millennium. (4) Three hours of lecture per week. This course seeks to provide a rigorous understanding of the global size and nature of the 21st-century poverty- alleviation. Students will take a look at popular ideas of poverty-alleviation, the institutional framework of poverty ideas and practices, the social and political mobilizations that seek to transform the structures of poverty. (F,SP) Roy

C118. Introductory Applied Econometrics. (3) Three hours of lecture and one hour of discussion per week. Prerequisites: Statistics 2 or equivalent. Formulation of a research hypothesis and definition of an empirical model. Specification of a theoretical and time-series data; econometric methods for the analysis of qualitative information; hypothesis testing. The techniques of statistical and econometric analysis are developed through applications to a set of case studies and real data in the fields of environmental, resource, and international development economics. Students learn the use of a statistical software for economic data analysis. Also listed as Environmental Economics and Policy C118. (F) Sadoulet

120. Selected Topics. (3) Course may be repeated for credit. Three hours of lecture per week. Interdisciplinary study of selected topics in international and area studies. Each offering focuses on prominent issues of international concern in greater depth than can be accomplished in a general topic lecture course. Through the use of lectures, discussions, and multi-disciplinary perspectives, students will gain a variety of perspectives relating to the subject matter of the course. Students will be expected to successfully complete various writing assignments or short projects, and written exams. Instructor and topic vary from term to term. (F,SP)

140. Special Topics. (2) Course may be repeated for credit. Three hours of lecture every other week. Prerequisites: Consent of instructor. A short course designed to provide a vehicle to take advantage of short-term visiting to campus who have considerable expertise in areas of interest to international and area studies. Topics will vary from semester to semester. (F,SP)

C145. Multicultural Europe. (4) Three hours of lecture per week. Formerly Interdisciplinary Field Studies 145. In this course, we will trace some of the substantive changes and transformations taking place in contemporary Europe in the areas of culture, society, and politics. In particular, we will look at the effects of migration flows—diasporas and processes—on the national culture of the core countries and examine the ways in which particular national cultures react to the increasing multiculturalization of Europe. The goal of the course is to familiarize students with a variety of cultural, social, and political innovations that accompany the formation of multicultural Europe. This involves (1) an examination of the traditional concepts of nationality and citizenship, and (2) a study of the Europeanization of culture. Also listed as Geography C152, History C176, and Interdisciplinary Studies Field Maj C145.

150. Advanced Studies in International and Area Studies. (Course may be repeated for credit. Three hours of lecture and one hour of discussion per week. Advanced multidisciplinary research in current issues and topics in international and area studies. Course will focus on specific issues or geographical areas with appropriate comparative material included. A major research project is required as well as class presentations. Topics change each semester. (F,SP)

171. Internship in Agroecology and Sustainable Development. (4-8) Course may be repeated for a maximum of 16 units. Twelve to twenty-four hours of internship per week. Prerequisites: Junior or senior standing or consent of instructor. Students work in selected internships in non-profit, government agencies, or farmer networks associated with the Brazilian Consortium of Agroecology and Sustainable Development. The purpose of the internship is to gain direct experience in agroecological techniques and methodologies to achieve sustainability in agriculture. Internships are approved in advance by the faculty coordinator with whom each student will be required to meet regularly and plan out complimentary readings and regular written reports. Work commitments will range between 370-400 hours depending on the number of units undertaken and the length of the term enrolled. Final assessments will be based upon performance in the internship, quality of written reports, and a final assessment by the faculty advisor. Internship is repeatable for up to 16 units. Enrollment is restricted to 10 students per term selected through a special selection process. See instructor for details. (F,SP) Alfie
The course will start with a brief introduction and multiple special topic assignments connected to the various readings. Students will participate in group discussions and presentations organized around central themes. Final assessments will be based upon participation, the length of the term and is repeatable for up to 16 units. Enrollment is restricted to 10 students per term selected through a special selection process. See instructor for details. (F,SP) Altieri

175. The Economics of Climate Change. (4) Three hours of lecture and one hour of discussion per week. Prerequisites: Economics 1, or equivalent. The course will start with a brief introduction and evaluation of the scientific aspects behind climate change. Economic models will be developed to analyze the impacts of climate change and provide and critique existing and proposed policy tools. Specific topics studied are impacts on water resources and agriculture, economic evaluation of impacts, optimal control of greenhouse gases, benefit cost analysis, international treaty formation, discounting, uncertainty, irreversibility, and extreme events. (F,SP) Aufhammer, Fisher

C175. The Economics of Climate Change. (4) Three hours of lecture and one hour of discussion per week. Prerequisites: Economics 1, or equivalent. Formerly 175. The course will start with a brief introduction and evaluation of the scientific aspects behind climate change. Economic models will be developed to analyze the impacts of climate change and provide and critique existing and proposed policy tools. Specific topics studied are impacts on water resources and agriculture, economic evaluation of impacts, optimal control of greenhouse gases, benefit cost analysis, international treaty formation, discounting, uncertainty, irreversibility, and extreme events. Also listed as Environmental Economics and Policy C175s. (F,SP) Aufhammer, Fisher

180. Current Issues in International and Area Studies. (2) Course may be repeated for credit. Two to three hours of lecture/discussion per week. Section 1 to be graded on a letter-grade basis. Section 2 to be graded on a pass/no pass basis. This course provides an opportunity to study and discuss issues and events having recent international impact and/or interest. The course will present a multidisciplinary perspective on specific subjects with the intent of linking students to current scholarship engaged in understanding and explaining current international issues, events, and crisis. The subjects will vary from semester to semester. Students may enroll in the lecture only for two units or may enroll in the lecture and discussion section for three units. (F,SP)

197. Field Studies. (1-4) Course may be repeated for credit. Individual meetings. Must be taken on a pass/no pass basis. Prerequisites: Upper division standing and consent of instructor. Supervised experience relevant to specific aspects of international and area studies in off-campus organizations. Regular individual meetings with faculty sponsor and written reports required. (F,SP)

198. Directed Group Study. (1-4) Course may be repeated for credit. Group meetings. Must be taken on a pass/no pass basis. Prerequisites: Consent of instructor. Written proposal must be approved by a faculty adviser. Enrollment restrictions apply; see the Introduction to Courses and Curricula section of this catalog. (F,SP)

199. Supervised Independent Study and Research for Undergraduates. (1-3) Course may be repeated for credit. One to three hours of independent study per week. Graduate seminars are specifically focused on issues of peace, conflict resolution, human rights, and other topics relevant to the scope of study represented by the Rotary Peace Fellows. Seminars cover meetings, readings, presentations, and discussions. Assignments will include both individual projects and group projects of appropriate scope and depth reflecting of unit value of each offering. (F,SP) Staff

271. Internship in Agroecology and Sustainable Development. (4-8) Course may be repeated for a maximum of 16 units. Twelve to twenty-four hours of internship per week. Prerequisites: Graduate standing or consent of instructor. Students work in selected internships in agroecology, or farm. Networks associated with the Brazilian Consortium on Agroecology and Sustainable Development. The purpose of the internship is to gain direct experience in agroecological techniques and methodologies to evaluate and provide recommendations based on approved in advance by the faculty coordinator with whom each student will be required to meet regularly and plan out complimentary readings and regular written reports. Work commitments will range between 180-360 hours depending upon the number of units undertaken and the level of enrollment. Final assessments will be based upon performance in the internship, quality of written reports and a final assessment by the faculty advisor. Internship is repeatable for a maximum of 8 units. Enrollment is restricted to 10 students per term selected through a special selection process. See instructor for details. (F,SP) Altieri

272. Agroecology: A Brazilian Perspective. (4-8) Course may be repeated for a maximum of 16 units. Twelve to 24 hours of lecture/discussion per week. Prerequisites: Graduate standing or consent of instructor. This course will be conducted in Brazil at the Universidade de Campinas and Universidade Federal de Santa Catarina. Students participate in a combination of formal lectures, directed discussions based upon assigned readings, and presentations by subject experts and faculty from the exchange universities. Field sites visits to local farms and agroecology centers will complement the classroom lectures and discussions. Final assessments will be based upon performance in multiple special topic assignments connected to the various readings. Students will participate in group discussions and presentations organized around central themes. Final assessments will be based upon written performance, quality of presentation of material for discussion, and demonstration of mastery of required reading assignments through quizzes, exams, and oral discussions. Grading will vary from term to term and is repeatable for up to 16 units. Enrollment is restricted to 10 students per term selected through a special selection process. See instructor for details. (F,SP) Altieri

292. Directed Advanced Research. (2-4) Course may be repeated for credit. Individual weekly meetings. Prerequisites: Consent of instructor and graduate-level standing. This course is intended to provide supervision in preparation of a major research paper on international and area studies topics. The topic should be agreed upon in advance by both the student and faculty sponsor and generally will be topics not covered in other existing course work. (F,SP)

296. Directed Group Study. (1-4) Course may be repeated for credit. Group meetings. Must be announced. Prerequisites: Consent of instructor and graduate-level standing. Group conferences intended to provide supervision in directed readings and research in subject matter not covered by available seminar offerings. (F,SP)

Professional Courses

301. Professional Training: Teaching in IAS. (2) Course may be repeated for a maximum of 8 units. Required for graduate student instructors in International Area Studies major programs for the first time, and is strongly recommended for all IASTP GSs. Two hours of lecture per week. Must be taken on a satisfactory/unsatisfactory basis. Prerequisites: Appointment as a graduate student instructor in one of the International and Area Studies Teaching Programs. This course is intended to prepare students from the various social science disciplines to be instructors in interdisciplinary/multi-departmental courses. It will serve as a forum to discuss problems and create innovative solutions to these problems. Focusing on course construction and operation, specialists from various disciplines will discuss strategies for moving outside of their areas of specialization and into international and area studies. Graduate students will be provided training in building their own interdisciplinary courses from the ground up. Organizing syllabi, preparing lectures, devising written assignments, leading discussions, constructing examinations, and grading them, will all be covered over the course of the semester. (F,SP)
Italian Studies
(College of Letters and Science)

Department Office: 6303 Dwinelle Hall, (510) 642-2784, italian.berkeley.edu

Professors
Albert Russell Ascoli, Ph.D. Cornell University. Medieval and Renaissance literature and culture.
Loren Partridge, Ph.D. Harvard University. Italian Renaissance art.
Barbara Spackman, Ph.D. Yale University. Late 19th- and 20th-century literature and culture, gender studies, literary and cultural theory.
Louise George Clubb (Emerita), Ph.D.
Gustavo Costa (Emeritus), Dottore in Filosofia
Anthony Newcomb (Emeritus), Ph.D.
Nicolas J. Perella (Emeritus), Ph.D.
Ranolph Starn (Emeritus), Ph.D.

Associate Professors
Steven Botterill, Ph.D. Cambridge University. Dante, anthropology and history of modern Italy, colonialism, architecture and urbanism.
Gabriel Moses, Ph.D. Brown University. Italian film and film theory, and Italian American studies.
Alessia Ricciardi, Ph.D. Yale University. Post World War II Italian culture and contemporary political philosophy.

Senior Lecturer
Catherine Feucht (Emerita), B.A.

Lecturer
Amando El Carlo, Ph.D. University of Michigan, Ann Arbor. Language program coordinator

Undergraduate Program Faculty Adviser:
Mr. Botterill.

Graduate Adviser: Mr. Ascoli.

Department Overview
The undergraduate program is designed to provide training to a high degree of fluency in reading, writing, and speaking Italian; to give students the opportunity for intensive study in Italian literature and culture from the Middle Ages to the present day; to introduce them as fully as possible to the richness and variety of Italian experience past and present; and to extend their linguistic and literary training by exposing them to approaches drawn from other scholarly disciplines.

The graduate program offers in-depth training in the field of Italian studies, leading to the Ph.D. degree. Beginning with a strong foundation in the critical analysis and historical understanding of Italian literature, the program encourages exploration of a wide range of disciplinary and interdisciplinary areas, including, but not limited to, film studies; comparative literature; literary, rhetorical, and cultural theory; gender studies; history; anthropology; history of art and music; architecture; classics; political science; medieval and early modern studies; Romance languages and literature; and so on.

The Major
Lower Division. 20 units of Italian Language courses to include Italian Studies 1, 2, 3, 4, Elementary/Intermediate/Advanced Italian, or their equivalent in linguistic proficiency.

Upper Division. 32 units of upper division courses, to include Italian Studies 101A-101B, Advanced Grammar, Reading, and Composition, and Italian Studies 103, History of Italian Culture, or Italian Studies 104, Reading Italian Literature. At least 20 units must be taken in residence. Up to 8 credits of coursework with primary readings and discussion in English may be counted toward the major. A grade-point average of 2.0 must be maintained in the major and overall.

honors Program. To enter the honors program, in addition to having a minimum overall grade-point average of 3.3, students must have completed at least 20 upper division units in the major with a major average of 3.5. Students must enroll in Italian Studies H195 for one semester during which they will carry out research and write an honors thesis under the guidance of a faculty adviser. Students who meet the grade-point requirements must first consult with the undergraduate faculty adviser in order to pursue an honors thesis in their senior year.

The Minor
Students in the College of Letters and Science may complete one or more minors of their choice, normally in a field both academically and administratively distinct from their major.

Lower Division. 20 units of Italian language courses to include Italian Studies 1, 2, 3, 4, Elementary/Intermediate/Advanced Italian, or their equivalent in linguistic proficiency.

Upper Division. 20 units of upper division courses, to include either Italian Studies 101A or 101B, and either Italian Studies 103 or 104. At least 12 units must be taken in residence. Up to 4 credits of coursework with primary readings and discussion in English may be counted toward the minor unit requirement. Such courses may be taken in other departments (e.g., History, History of Art, Music) with advance permission of the undergraduate faculty adviser.

No more than 8 credits earned through Education Abroad Programs may count toward upper division requirements. All courses for the minor must be taken on a letter-graded basis. A grade-point average of 2.0 is required in upper division courses used for the minor.

Study in Italy
Berkeley offers advanced students the opportunity of studying Italian in Padua, Bologna, Trento, Rome, Siena, or Milan. The programs feature courses in several aspects of Italian language, culture, and history. The programs also provide limited English (students may have demonstrated proficiency in one of these in the first phase of the program); the choice of languages will depend upon the area of doctoral research of each student. Students write a prospectus following the examination, and the degree is awarded upon approval of a completed doctoral dissertation. Detailed information is available from the department.

Ph.D. in Romance Languages and Literatures. A Ph.D. in Romance Languages and Literatures with emphasis in Italian is also offered. For information, please see the entry for Romance Languages and Literatures in this catalog.

Lower Division Courses
1. Elementary Italian. (5) Five hours of lecture and one hour of laboratory per week. Basic grammar for beginners. Part one. (F,SP)
1G. Reading Italian for Graduate Students. Three hours of lecture/discussion per week. Must be completed before enrolling in the second, doctoral phase of the program and orally in the primary field. (F,SP)
3. Intermediate Italian. (5) Five hours of lecture and one hour of laboratory per week. Prerequisites: 1 or 14A. Basic grammar for beginners: Part two. (F,SP)
4. Advanced Italian. (5) Five hours of lecture per week. Prerequisites: 3. Selected readings in modern Italian prose; a review of the essentials of grammar; written and oral compositions. (F,SP)
R5A-RSB. Italy at Home and Abroad. (4;4) Three hours lecture/discussion per week. Prerequisites: UC Entry Level Writing Requirement or equivalent for R5A; R5A or equivalent for RSB. Reading and composition course based on works by Italians and foreigners about Italy and its culture and by Italians about their distinctive experiences of other cultures as tourists and emigres. Works studied will be primarily chosen from among fiction and non fiction narratives, both originally in Italian and translated into it. R5A satisfies the first half of the Reading and Composition Requirement and RSB satisfies the second half. (F,SP) Staff
12. Advanced Conversational Italian. (3) Three hours of lecture/discussion per week. Prerequisites: 3 or equivalent, or consent of instructor. The course is designed to develop and enhance oral communication through Education Abroad Programs may count toward upper division requirements. All courses for the major must be taken on a letter-graded basis. A grade-point average of 2.0 must be maintained in the major and overall.

Honors Program. To enter the honors program, in addition to having a minimum overall grade-point average of 3.3, students must have completed at least 20 upper division units in the major with a major average of 3.5. Students must enroll in Italian Studies H195 for one semester during which they will carry out research and write an honors thesis under the guidance of a faculty adviser. Students who meet the grade-point requirements must first consult with the undergraduate faculty adviser in order to pursue an honors thesis in their senior year.

The Minor
Students in the College of Letters and Science may complete one or more minors of their choice, normally in a field both academically and administratively distinct from their major.

Lower Division. 20 units of Italian language courses to include Italian Studies 1, 2, 3, 4, Elementary/Intermediate/Advanced Italian, or their equivalent in linguistic proficiency.

Upper Division. 20 units of upper division courses, to include either Italian Studies 101A or 101B, and either Italian Studies 103 or 104. At least 12 units must be taken in residence. Up to 4 credits of coursework with primary readings and discussion in English may be counted toward the minor unit requirement. Such courses may be taken in other departments (e.g., History, History of Art, Music) with advance permission of the undergraduate faculty adviser.

No more than 8 credits earned through Education Abroad Programs may count toward upper division requirements. All courses for the minor must be taken on a letter-graded basis. A grade-point average of 2.0 is required in upper division courses used for the minor.

Study in Italy
Berkeley offers advanced students the opportunity of studying Italian in Padua, Bologna, Trento, Rome, Siena, or Milan. The programs feature courses in several aspects of Italian language, culture, and history. The programs also provide limited English (students may have demonstrated proficiency in one of these in the first phase of the program); the choice of languages will depend upon the area of doctoral research of each student. Students write a prospectus following the examination, and the degree is awarded upon approval of a completed doctoral dissertation. Detailed information is available from the department.

Ph.D. in Romance Languages and Literatures. A Ph.D. in Romance Languages and Literatures with emphasis in Italian is also offered. For information, please see the entry for Romance Languages and Literatures in this catalog.

Lower Division Courses
1. Elementary Italian. (5) Five hours of lecture and one hour of laboratory per week. Basic grammar for beginners. Part one. (F,SP)
1G. Reading Italian for Graduate Students. Three hours of lecture/discussion per week. Must be completed before enrolling in the second, doctoral phase of the program and orally in the primary field. (F,SP)
3. Intermediate Italian. (5) Five hours of lecture and one hour of laboratory per week. Prerequisites: 1 or 14A. Basic grammar for beginners: Part two. (F,SP)
4. Advanced Italian. (5) Five hours of lecture per week. Prerequisites: 3. Selected readings in modern Italian prose; a review of the essentials of grammar; written and oral compositions. (F,SP)
R5A-RSB. Italy at Home and Abroad. (4;4) Three hours lecture/discussion per week. Prerequisites: UC Entry Level Writing Requirement or equivalent for R5A; R5A or equivalent for RSB. Reading and composition course based on works by Italians and foreigners about Italy and its culture and by Italians about their distinctive experiences of other cultures as tourists and emigres. Works studied will be primarily chosen from among fiction and non fiction narratives, both originally in Italian and translated into it. R5A satisfies the first half of the Reading and Composition Requirement and RSB satisfies the second half. (F,SP) Staff
12. Advanced Conversational Italian. (3) Three hours of lecture/discussion per week. Prerequisites: 3 or equivalent, or consent of instructor. The course is designed to develop and enhance oral communication
skilled at an advanced level, by means of conversational practice, discussion of readings, student presentation or original material, and use of audio-visual materials and realia. (SP) Di Carlo

24. Freshman Seminars. (1) Course may be repeated for credit as topic varies. Seminar format. Section 1 to be graded on a pass/fail basis. Section 2 to be graded on a pass/credit basis. Sections 3-4 to be graded on a pass/credit basis. The Berkeley Seminar Program has been designed to provide new students with the opportunity to explore an intellectual topic with a faculty member in a small-seminar setting. Berkeley Seminars are offered in all campus departments, and topics vary from department to department and semester to semester. (F,SP) Staff

30. Dante (in English). (3) Three hours of lecture per week. An introduction to Dante’s works in the cultural and historical context of the European Middle Ages. (F,SP) Botterill

39. Freshman/Sophomore Seminar. Course may be repeated for credit as topic varies. Seminar format. Section 1 to be graded on a letter-grade basis. Section 2 to be graded on a passed/not passed basis. Prerequisites: Priority given to freshmen and sophomores. Freshman and sophomore seminars offer lower division students the opportunity to explore an intellectual topic with a faculty member and a group of peers in a small-seminar setting. These seminars are offered in all campus departments; topics vary from department to department and semester to semester. (F,SP) Staff

40. Italian Culture (in English). (4) Three hours of lecture and one hour of discussion per week. Formerly 40A-40B. Introduction to Italian studies through selected topics and themes integral to the history, literature, and arts of Italy from Dante to Fellini. (F,SP) Staff

70. Italian Cinema: History, Directors, Genres, Introduction to Italian Cinema. (3) Course may be repeated for credit as topic varies. Three hours of lecture/discussion/analysis and two to three hours of film viewing per week. This course is a brief introduction to the history of Italian cinema. No prior knowledge of Italian cinema or film theory is necessary. We will study major auteurs and genres of Italian cinema in the context of Italian culture and history from 1895 to the present. The course is structured chronologically; we will begin with silent cinema, work our way through the 20th century, and end with contemporary cinema. All students must attend weekly screenings. Films and film clips will also be shown during lectures. (F,SP) Moses

84. Sophomore Seminar. (1,2) Course may be repeated for credit as topic varies. One hour of seminar per week per unit for 15 weeks. One and one-half hours of seminar per unit for 10 weeks. Two hours of seminar per week per unit for eight weeks. Three hours of seminar per week per unit for five weeks. Sections 1-2 to be graded on a passed/not passed basis. Sections 3-4 to be graded on a letter-grade basis. Prerequisites: At discretion of instructor. Sophomore seminars are small interactive courses offered by faculty members in departments all across the campus. Sophomore seminars offer opportunity for close, regular intellectual contact between faculty members and students in the crucial second year. The topics vary from department to department and semester to semester. Enrollment limited to 15 sophomores. (F,SP) Staff

98. Directed Group Study. (1-4) Course may be repeated for credit. Hours to be arranged. Must be taken on a passed/not passed basis. Group study of selected topics not covered by regularly scheduled courses. (F,SP) Staff

101A-101B. Advanced Grammar, Reading, and Composition. (4,4) Three hours of lecture per week. Prerequisites: Italian 100A or equivalent and grammatical analysis of representative texts; advanced written composition. (F,SP) Di Carlo

103. History of Italian Culture. (3) Three hours of lecture per week. Formerly 103A-103B. Introduction to the historical development of culture and literature in Italian from the Middle Ages to the present day. Lectures, critical analysis of texts, frequent writing exercises. In Italian. (F,SP) Staff

104. Reading Italian Literature. (4) Three hours of lecture/discussion per week. Introduction to basic works of Italian literature (fiction, poetry, drama) with an emphasis on techniques of reading. (F,SP) Staff

109. Dante’s Commedia (in Italian). (4) Three hours of lecture per week. Formerly 109A-109B. A close introduction to Dante’s Comedy. Taught in Italian. (F,SP) Staff

110. Literature and Culture of the 13th and 14th Centuries. (4) Course may be repeated for credit as topic varies. Three hours of lecture per week. Formerly 110A-110B. Emphasis on the literature and culture of the 13th and 14th centuries. Literature will emphasize the “Stil Novo” and Dante’s major works as well as Boccaccio’s Decameron and Petrarch’s Rime. (F,SP) Staff

112. Sixteenth-Century Literature and Culture. (4) Course may be repeated for credit as topic varies. Three hours of lecture per week. Formerly 112A-112B. Study in the literature and culture of the High Renaissance and the Late Renaissance. (F,SP) Staff

115. Nineteenth-Century Literature and Culture. (4) Course may be repeated for credit as topic varies. Three hours of lecture per week. Studies in the literature and culture of 19th-century Italy. (F,SP) Spackman

117. Twentieth-Century Literature. (4) Course may be repeated for credit as topic varies. Three hours of lecture per week. The main trends in the fiction, poetry, prose and theatre of the 20th century. (F,SP) Staff

120. Topics in Italian Studies. (4) Course may be repeated for credit as topic varies. Three hours of lectures, readings, and discussion per week on major authors, themes, and movements in Italian literature. (F,SP) Staff

130A. Dante’s Inferno (in English). (4) Three hours of lecture per week. An introduction to Dante’s Inferno in the context of his other works. Taught in English. (F,SP) Ascoli, Botterill

130B. Dante’s Purgatorio and Paradiso (in English). (4) Three hours of lecture per week. A close introductory reading of Dante’s Purgatorio and Paradiso. Prior completion of Italian 130A. Inferno is recommended. Taught in English. (F,SP) Ascoli, Botterill

160. Studies in the History, Society, and Politics of the Italian Peninsula. (4) Course may be repeated for credit as topic varies. Three hours of lecture per week. The course will center on the history of Italy from the period of significant wars of independence to the fall of the Fascist regime. Historians, sociologists, and political scientists will present their work on themes of interest to the individual student. (F,SP) Staff

165. Special Topics in Italian Literature. (4) Course may be repeated for credit as topic varies. Three hours of lecture/discussion per week. The course will study Italian literature from the perspective of literary discourse in its responses to a broad spectrum of cultural, ideological and institutional forces. Taught in English or Italian. (F,SP) Staff

170. The Italian Cinema: History, Genres, Authors. (4) Course may be repeated for credit as topic varies. Three hours of lecture and two to three hours of film viewing, analysis, and discussion per week. An analysis of selected historical periods and specific film genres such as neorealism, comedy, self-reflexive cinema. Occasionally the course will concentrate on a specific director and study his individuality through style, theme, and personal development. This course fulfills Italian Studies / 321

175. Film and Literature (in English). (4) Course may be repeated for credit as topic varies. Three hours of lecture, two hours of film viewing, and two hours of video-production workshop per week. The interaction of film studies and film studies in Italian culture. Filmed as part of this study, film novels, the work of outstanding Italian film directors. Literature shaped by film experience and films dealing with the essence of cinematic form will be analyzed. This course may fulfill the film major requirement in theory. (F,SP) Moses

H195. Special Studies for Honors Candidates. (3) Individual conferences. Prerequisites: 3.5 overall GPA, 3.5 GPA in the major and must have completed at least 18 upper division units in the major. Limited to senior honors candidates. Directed study relating to the writing of an honors thesis. (F,SP) Staff

198. Directed Group Study. (1-4) Course may be repeated for credit. Hours to be arranged. Must be taken on a passed/not passed basis. Prerequisites: Restricted to senior students with overall GPA of 3.0 or better. Enrollment requires permission of the Introductory to the Course and Curricula section of this catalog. (F,SP) Staff

Graduate Courses

200. Italian Stilistics. (2,4) Students taking course for 2 units do not write a final paper and may enroll in the course on a satisfactory/unsatisfactory basis. Three hours of seminar per week. An introduction to the history of Italian literary criticism through modern works. Required of all Master of Arts candidates. (SP) Staff

201. Linguistic History of the Romance Languages. (4) Three hours of lecture per week. Prerequisites: Knowledge of at least two of the major Romance languages (French, Spanish). Linguistic development of the major Romance languages (French, Italian, and Spanish) from the common Latin origin. Comparative perspective, combining comparative and historical methods. Required of all Master of Arts candidates. Also listed as Spanish C202 and French C202. Staff

204. Contemporary Trends in Critical Theory. (2,4) Three hours of seminar and one hour of discussion per week. This course is designed to provide the student with a general view of the major developments in contemporary criticism and an opportunity to apply critical methods to literary texts. One oral report and a final paper. Staff

205. Proseminar I: Italian Literary Studies. (2,4) Students taking this course for 2 units do not write a final paper and may enroll in the course on a satisfactory/unsatisfactory basis. Two hours of seminar and one hour of discussion per week. This course introduces the student to Italian literature in its historical scope, while preparing the range of research interests represented on the Italian Studies faculty. Required of all Master of Arts candidates. (F,SP) Staff

210. Seminar in Medieval Literature and Culture. (2,4) Course may be repeated for credit as topic varies. Students taking this course for 2 units do not write a final paper and may enroll in the course on a satisfactory/unsatisfactory basis. Three hours of seminar per week. Formerly 207, 208, 211, 213. Investigation of major topics, genres, and authors in the vernacular and Latin culture of Italy in the 13th and 14th centuries. (F,SP) Ascoli, Botterill

212. Seminar on Dante. (2,4) Course may be repeated for credit when readings change. Students taking this course for 2 units do not write a final paper and may enroll in the course on a satisfactory/unsatisfactory basis. Three hours of seminar per week. Formerly 217. Investigation of major topics, genres, and authors in Italian literature
and culture of the 15th and 16th centuries. (F,SP) Ascoli, Clubb, Moses

230. Seminar in 19th-Century Literature and Culture. (2,4) Course may be repeated for credit when readings change. Students taking this course for 2 units do not write a final paper and may enroll in the course on a satisfactory/unsatisfactory basis. Three hours of seminar per week. Formerly 221. Investigation of major topics, genres, and figures in Italian literature and culture of the 19th century. (F,SP) Spackman

235. Seminar in 20th-Century Literature and Culture. (2,4) Course may be repeated for credit when readings change. Students taking this course for 2 units do not write a final paper and may enroll in the course on a satisfactory/unsatisfactory basis. Three hours of seminar per week. Formerly 222. Investigation of major topics, genres, and authors in Italian literature and culture of the 20th century. (F,SP) Spackman, Fuller

244. Special Topics in Genre and Mode. (2,4) Course may be repeated for credit as topic varies. Students taking this course for 2 units enroll in the course on a satisfactory/unsatisfactory basis and do not write a final paper. Three hours of seminar per week. Investigation of significant genres and modes of writing as they recur in the course of Italian cultural history. (F,SP) Staff

248. Special Topics in Interdisciplinary Italian Studies. (2,4) Course may be repeated for credit as topic varies. Students taking this course for 2 units enroll in the course on a satisfactory/unsatisfactory basis and do not write a final paper. Three hours of seminar per week. Investigation of topics in Italian cultural history from a multidisciplinary perspective. (F,SP) Staff

260. Directed Readings in Italian Literature and Culture. (2) Course may be repeated for credit as topic varies. Assigned readings and one meeting per week with professor. Must be taken on a satisfactory/unsatisfactory basis. Prerequisites: Consent of instructor. Directed readings undertaken under the direction of a faculty member of the department of Italian Studies in conjunction with an audit of a 100-series seminar. (F,SP) Staff

270. Seminar Research Course. (1) Course may be repeated for credit as topic varies. Prerequisites: Consent of instructor. Directed research leading to the writing of a term paper under the direction of an Italian Studies department faculty member. Requires concurrent enrollment in a 100-series seminar. (F,SP) Staff

280. Tutorial in Interdisciplinary Italian Studies. (4) Weekly meetings with professor. Prerequisites: Consent of instructor. Directed reading course combining elements of the student’s primary and secondary fields of graduate study, designed to fulfill the writing of a research paper. Course is required for all Doctor of Philosophy candidates. (F,SP) Staff

282. Prospectus Tutorial. (4) Regular meetings with professor. Prerequisites: Consent of instructor. Directed reading course leading to the production of a formal dissertation prospectus with detailed bibliographic research. Course is required for all Doctor of Philosophy candidates. (F,SP) Staff

290A-290B. Graduate Colloquium in Italian Studies. (2,2) Course may be repeated for credit. M.A. or Ph.D. students who elect to repeat the sequence must do so on a satisfactory/unsatisfactory basis. Two to three hours of colloquium per week. Section 1 to be graded on a letter-grade basis for M.A. students. Section 2 to be graded on a satisfactory/unsatisfactory basis for Ph.D. students. Prerequisites: Graduate standing in Italian studies. Formerly 290. Reports on current scholarly work by faculty and graduate students. (F,SP) Staff

298. Special Study. (1-4) Course may be repeated for credit. Individual conferences. Prerequisites: Consent of the instructor. Designed to allow students to do independent reading in areas not covered by other courses. Requires regular discussions with the instructor and a final written report. (F,SP) Staff

299. Directed Research. (6-12) Course may be repeated for credit. Individual conferences. Must be taken on a satisfactory/unsatisfactory basis. Limited to students engaged in research for the doctoral dissertation. (F,SP) Staff

601. Individual Studies for M.A. Candidates. (1-8) Course may be repeated for credit with consent of graduate adviser. May not be used for unit or residence requirement for the Master’s degree. Individual conferences. Must be taken on a satisfactory/unsatisfactory basis. Individual study in consultation with faculty member with a view to the M.A. comprehensive examination. May be taken only in the semester of the comprehensive examination. (F,SP) Staff

602. Individual Studies for Doctoral Students. (1-8) Course may be repeated for credit with consent of graduate adviser. Course does not satisfy unit or residence requirements for doctoral degree. Individual conferences. Must be taken on a satisfactory/unsatisfactory basis. Individual study in consultation with a faculty adviser. Intended to provide an opportunity for qualified students to prepare for the Ph.D. qualifying examination. May be taken only in the semester of the qualifying examination. (F,SP) Staff

Professional Courses

302. Practicum in College Teaching of Italian. (2,4) Course may be repeated for credit. Three to five hours of classroom teaching per week with regular supervision; routine evaluation conferences. Must be taken on a satisfactory/unsatisfactory basis. Prerequisites: 301. Concurrent service with Italian graduate student instructor. (F,SP) Di Carlo

355. Seminar in Language Pedagogy. (4) Course may be repeated for credit. Two hours of seminar and five hours of demonstration per week. Prerequisites: Graduate student instructor status. Formerly 301. Required of all graduate student instructors in first or second semester of teaching. This course provides instruction on the theory and practice of foreign language teaching and learning with lectures on methodology, testing, grading, class preparation, textbook selection and evaluation, course design and development, and the use of audio-visual and computer aids to instruction. A final research paper is required. It also includes supervised classroom practice. (F) Di Carlo

Journalism

Graduate School of Journalism

Office: 121 North Gate Hall, applyjs@berkeley.edu, (510) 642-3338 journalism.berkeley.edu

Dean: Orville Schell, M.A.

Professors

Lowell Bergman (The Reva and David Logan Distinguished Professor of Investigative Journalism), B.A. University of Wisconsin
Lydia Chavez, M.S. Columbia University Graduate School of Journalism. International reporting
Mark Danner, A.B. Harvard University. Foreign policy
William Drummond, M.S. Columbia University Graduate School of Journalism. Radio
Jon Else, M.A. Stanford University. Documentary film
Thomas Gremillion, J.D. University of California, Berkeley. Law and ethics
Cynthia Gorney, B.A. University of California, Berkeley. Long-form writing
Thomas Leonard, Ph.D. University of California, Berkeley. Television and radio reporting
Michael Pollan (The John S and James L Knight Professor of Science and Technology), M.A., Columbia University. Environmental journalism
Orville Schell (Dean), M.A. University of California, Berkeley. Contemporary China
Ben H. Bagdikian (Emeritus), A.B. Clark University
Timothy Ferris (Emeritus), B.S. Northwestern University
David Littlejohn (Emeritus), Ph.D. Harvard University
A. Kent MacDougall (Emeritus), M.S. Columbia University Graduate School of Journalism
Bernard B. Taper (Emeritus), M.A. Stanford University

Associate Professors

Neil Henry, M.S. Chinese University Graduate School of Journalism. Africa, race relations, sports reporting
Carolyn Wakeham, Ph.D. Washington University. China, Asian studies

Adjunct Professors

Paul Grabowicz, New media reporting and production

Ken Light, M.F.A. San Jose State University. Photjournalism

Senior Lecturers

Sharon Lee, B.A. Gloucer College. Television journalism
Robert Calo, M.A. San Francisco State University. Television journalism
Sandra W. Kuk, M.A. London School of Economics. Political and urban reporting
James Spaulding (Emeritus) Andrew A. Stem (Emeritus)

Program Directors

Lowell Bergman, Investigative Reporting
Lydia Chavez, Latin American Studies Concurrent Degree
Dede English, Magazine Center
Paul Grabowicz, New Media
Kenn Goulet, Center for Photography
Marcia Parker, Business Reporting
Susan Spaulding, Political Reporting
Carolyn Wakeham, Asian Studies Concurrent Degree

Graduate Program

The goal of the Graduate School of Journalism is to produce professional journalists who move on to positions of leadership and influence in American journalism. The Master of Journalism (M.J.) program provides intensive training in journalism skills and a knowledge of the traditions and principles of the field. A professional project is required to complete the two-year program. The program is rooted in the idea that the best possible preparation for careers in journalism is a sound liberal arts education followed by training in journalism at the graduate level. Concurrent degree programs with Law, Asian Studies, International and Area Studies, and the Center for Latin American Studies are available.

The school offers courses in print, broadcasting, documentary film, radio, new media, and photожournalism. All students must take a focused and demanding core course which stresses reporting and writing skills. This is because members of the faculty believe that the best students for careers in journalism is to place them under the supervision and guidance of seasoned journalists in small classes, give them instruction in the skills and attitudes of the craft, and intensive practice in reporting, writing, and editing. Professors give exhausive critiques of students’ work.

Beyond the core course, there are courses in specific areas, such as political, business, science, international, and cultural reporting. There are also courses in print, broadcasting, documentary film, radio, new media, and photожournalism. All students must take a focused and demanding core course which stresses reporting and writing skills. This is because members of the faculty believe that the best students for careers in journalism is to place them under the supervision and guidance of seasoned journalists in small classes, give them instruction in the skills and attitudes of the craft, and intensive practice in reporting, writing, and editing. Professors give exhausive critiques of students’ work.

Further information, application requirements, and copies of the Announcements of the Graduate School of Journalism are available from the
### Lower Division Courses

24. **Freshman Seminars.** (1) Course may be repeated for credit as topic varies. One hour of seminar per week. Sections 1-2 to be graded on a letter-grade basis. Supervised experience in the practice of critical thinking. Freshman seminars are offered in all campus departments, and topics vary from department to department and from semester to semester. (F,SP) Staff

39. **Freshman/Sophomore Seminar.** Course may be repeated for credit as topic varies. Seminar format. Sections 1-2 to be graded on a letter-grade basis. Sections 3-4 to be graded on a passed/not passed basis. Freshman and sophomore seminars offer lower division students the opportunity to explore an intellectual topic with a faculty member and a group of peers in a small-seminar setting. These seminars are offered in all campus departments; topics vary from department to department and from semester to semester. (F,SP) Staff

84. **Sophomore Seminar.** Course may be repeated for credit as topic varies. One hour of seminar per week for 15 weeks. One and two hours of seminar per week per unit for 10 weeks. Two hours of seminar per week per unit for eight weeks. Three hours of seminar per week per unit for five weeks. Sections 1-2 to be graded on a passed/not passed basis. Sections 3-4 to be graded on a letter-grade basis. Prerequisites: At discretion of instructor. Sophomore seminars are small interactive courses offered by faculty members in departments all across the campus. The topics of these seminars offer opportunities for close, regular intellectual contact between faculty members and students in the crucial second year. Topics vary from department to department and semester to semester. Enrollment limited to 15 sophomores. (F,SP)

98. **Directed Group Study in Journalism.** (1-4) Course may be repeated for credit. Hours to be arranged. Must be taken on a passed/not passed basis. (F,SP) Staff

### Upper Division Courses

100. **Introduction to News Reporting.** (4) Three hours of lecture per week. Survey of journalistic principles and practices, and study and practice of methods of gathering, writing, and editing news. (F) Henry

141. **The Media and Society.** (3) Three hours of lecture per week. Critical analysis of the structure and dynamics of contemporary mass media and their impact on society. (SP) Staff

154W. **Introduction to Opinion Writing:** Walter Lippmann Meets the Blog. (3) Course may be repeated for credit. Three hours of lecture per week. Prerequisites: Admission to UC Berkeley Washington Program. This course is designed to introduce students to the history and craft of modern opinion writing. The primary goal is to help students sharpen their writing and analytical skills in an opinion piece. Sections 3-4 to be graded on a letter-grade basis. Prerequisites: Permission of instructor. Freshmen and sophomores majoring in journalism are encouraged to enroll in this course. (F,SP) Staff

### Graduate Courses

200. **Reporting the News.** (5) Five hours of seminar and 15 hours of fieldwork per week. In this course, students are taught the skills of reporting and writing news stories and of collecting information. Close individual attention is given to each reporting assignment. Required in the fall term of first year. Limited to first year graduate students in Journalism. (F) Staff

201. **Advanced News Reporting.** (3-4) Course may be repeated for credit with consent of instructor. Three to four hours of seminar and eight hours of field work in news reporting per week. Prerequisites: 200 or consent of instructor. Advanced study of reporting in more complex subject areas and more sophisticated writing styles. (F,SP) Staff

205. **News Editing.** (2) Three hours of lecture/laboratory per week, plus outside assignments and reading. Must be taken on a satisfactory/unsatisfactory basis. Study of the principles and practice of news editing, copyreading, headline writing, and makeup, with an emphasis on creative editing and critiques of manuscripts. (F,SP) Staff

210. **News Photography.** (2) Two hours of lecture and four hours of laboratory per week. Must be taken on a satisfactory/unsatisfactory basis. Prerequisites: Prior to journalism graduate students. Fundamentals of photography and taking news photography. (F,SP) Light

211. **Computer Assisted Reporting.** (2) Two hours of lecture per week. Students learn how journalists are using the Internet to help report stories. They get instruction in using Web search engines and subject guides, exploring information databases, and using the Web to find stories. Prerequisites: Permission of instructor. Course satisfies American Cultures Requirement (AC). (F,SP) Staff

### Upper Division Courses

212. **Advanced Radio.** (1-3) Course may be repeated for credit with consent of instructor. Two hours of lecture/discussion per week. Prerequisites: 275 or consent of instructor. Students will continue to develop their news and production skills in several formats: (1) the reporting and production of the weekly “Inside Oakland” program (broadcast on KALX-FM). Each episode explores a specific theme with focus on graphic reporting. The course is known as Oakland; (2) the collaborative production of a documentary program focusing on a particular topic; (3) the development and production of independent long-form stories for broadcast on different outlets. (F,SP) Drummond

213. **China in the 1990s: Reporting the Contra-dictions.** (4) Students will receive no credit for Sociology C183 after taking Sociology 183. Three hours of lecture/discussion per week. Prerequisites: Sociology C183; 1, 3, 3AC or consent of instructor. Formerly 183. This interdisciplinary course applies sociological methods to understand the dramatic social consequences of the collapse of the Chinese communist regime in 1989. Students will explore the practical problems of how the Chinese and American media represent these developments to audiences at home and abroad. Sociological topics include change in Communist Party structure and the impact of the new market economy; ownership reform in the urban economy; and realization of the urban residence control system. This introduction to journalism in China considers how the structure, ownership and control of the state media are relevant to the study of Chinese society and politics. Prerequisites: Priority to journalism graduate students. (F) Staff

214. **Photography Tutorial.** (2-3) Two hours of lecture per week. This photo tutorial will emphasize the technical aspects in photography such as darkroom skills, lighting, cropping, composition, editing, and presentation. Students will work in weekly assignments as well as a final project that will directly correlate with the material covered in class as well as to the courses taught by Ken Light. The tutorial will encourage students to explore their own interests, to improve not only their conceptual understanding of the medium, but especially their technical, shooting, and printing knowledge. Several Photoshop tutorials will also be incorporated in the class for those students who are interested in learning digital photography and its possibilities. The sessions will cover scanning, resolution, and tools applicable to image manipulation, color correction, and output. The Photography Tutorial and content will be of course to a large extent determined by the questions raised by students, their levels of experience in the medium, as well as their final goals. (F,SP) Chakarova

215. **Multimedia Skills.** (3) Three hours of workshop per week. This class teaches the fundamentals of using digital video, audio, and photo equipment, as well as editing digital files. The course is designed to expose students to what it is like to report in a multimedia environment. While primarily for students taking new media publishing courses, the class will be valuable to any student who wants to learn the emerging convergence of broadcast, print, and web media. (F,SP) Grabowicz

216. **Multimedia Reporting.** (2,3) Course may be repeated for credit with different topic and consent of instructor. Three hours of workshop per week. Prerequisites: 215 (can be taken concurrently); Dreamweaver, Photoshop, and iMovie or Final Cut Pro. For journalists, the World Wide Web opens a powerful way to tell stories by combining text, video, photos, graphics, and multimedia. Students will learn multimedia-reporting basics, how the web is changing journalism, and its relationship to democracy and community. Students use storyboarding techniques to construct nonlinear stories; they research, report, edit, and assemble two story projects. (F,SP) Staff

218. **China’s Information Revolution.** (2) Course may be repeated for credit. Two hours of seminar per week. Prerequisites: Consent of instructor. This class is about how to tap the power of the Internet to cover China’s social and political changes and examine its role in the global community. Students will learn about weblogs, wiki, and syndication technologies and how to use these information tools to follow unfolding developments in this rapidly changing country. The class will also conduct extensive reading/discussion sessions on China, especially focusing on the intersection of technology, media, and social changes. (F,SP) Staff
219. Mini-Special Topics. (1) Course may be repeated for credit with different topic and consent of instructor. Two to three hours of workshop for six weeks. Two to three hours of workshop for five weeks. Two to three hours of workshop for four weeks. Must be taken on a satisfactory/unsatisfactory basis. A four-to-six week intensive workshop mini-course designed to accompany and enhance other courses in the program. Workshop topics vary from semester to semester, but have included Using the Flash Animation Program, Audio Editing with Pro Tools, Designing Web Databases, Dynamic Web and Using Geographic Information System Programs. (F.S.P) Staff

224. Reporting on Social Issues. (3-4) Three hours of lecture and eight hours of fieldwork per week. Prerequisites: For journalism students, 200; all others consent of instructor. Work on a selection of major social problems, such as poverty, education, health, and the environment. (F.S.P) Pollan

227. Reporting of Cultural Events. (3-4) Three hours of lecture/discussion and eight hours of field work per week. Advanced study of reporting and critical writing in fields such as drama, music, fine arts, literature, and architecture. (F.S.P) Staff

228. Political Reporting. (3-4) Course may be repeated for credit with consent of instructor. Three hours of lecture/discussion and eight hours of field work per week. Prerequisites: For journalism students, 200 or equivalent; for others, consent of instructor. Advanced study of the skills of reporting developments in such fields as science, education, health, or the environment. (F.S.P) Pollan

230. Business Reporting. (3-4) Course may be repeated for credit with consent of instructor. Three hours of lecture/discussion and eight hours of field work per week. Prerequisites: For journalism students, 200, Reporting and writing of business, financial, and consumer affairs. (F.S.P) Staff

231. Advanced Business Reporting. (3-4) Course may be repeated for credit with consent of instructor. Three hours of seminar per week. Prerequisites: 200, 230, or consent of instructor. Advanced reporting and writing of business, financial, and consumer affairs. (F.S.P) Staff

234. International Reporting. (4) Course may be repeated for credit. Three hours of seminar per week. Prerequisites: Consent of instructor. This course is designed for students who are interested in foreign reporting. Course will include a broad overview of the issues that need to be researched when reporting on the politics, economics, and social issues of a foreign country. Class trips have traveled to Mexico, China, Cuba, Hungary, Ghana, Hong Kong, India, Japan, Venezuela, Ecuador, and Peru. (F.S.P) Chavez, Wakeman

235. Covering Asia. (1,2) Two hours of seminar per week. This course will look at selected countries of Asia from the inside out and the outside in, with perspectives, analysis, and guidance from commentators here and journalists there. Course will cover how to research and prepare for reporting; how to get to sources; how to assess risks in the field; how to develop the story. Students will follow international beats similar to those held by overseas correspondents and produce oral and written reports analyzing the coverage in various media. (F) Wakeman

237. Reporting on Japan. (1,2) Course may be repeated for credit with different topic and consent of instructor. Two hours of seminar per week. Each semester, this course will focus on a different aspect of Japan. Among other topics, the class may discuss Japan’s changing cultural standards or its developing social problems, its political shifts or its history, the changing economy or the shifts in its regional relations and its role in the world, the role of experts, writers, businessmen, and diplomats—and roundtable discussions, students will develop a greater knowledge of the country for use when reporting. (F.S.P) Wakeman

242. Profiles. (3) Three hours of seminar per week. Prerequisites: 200 or consent of instructor. This workshop uses the profile form to develop a variety of skills that may be helpful whenever undertaking an ambitious story: figuring out what the story is and why you are writing it; interviewing, information-gathering; background reporting; structuring material; finding your voice; describing people without resorting to cliche; crafting a lead from what seems an infinite number of possibilities. Readings include profiles from Time, Newsweek, and newspaper profile writers. (F.S.P) Gorney

243. Long-Form Writing. (3,4) Course may be repeated for credit with consent of instructor. Three hours of seminar per week. Prerequisites: 200 or consent of instructor. This class will trace the process of writing long-form pieces: how writers choose their sources, gather information, organize their material, and decide whether or not to believe what people tell them. Students will act as an editorial board for each other’s work, including specific book excerpts, Pulitzer-winning newspaper features, and magazine pieces from a variety of outlets. All assignments are intended for publication. (F.S.P) Gorney, Pollan

245. Social Aspects of the Mass Media. (3) Course may be repeated for credit with consent of instructor. Three hours of lecture/discussion per week. Study and analysis of the techniques of writing and evaluating the mass media, discussion of problems of ethics and responsibility, and the production of several research papers. (SP) Staff

249. Media and Society in China. (3) Three hours of lecture/discussion per week. This seminar examines the role of the media in China of the 1990s. Students will analyze the development and impact of the mass media (newspapers and magazines, radio, and television) and of the popular media (revolutionary operas, films, short stories, reportage, wall posters, cartoons, advertisements) from the period of the Communist victory and the Korean War through the Cultural Revolution to the democracy movements of 1979 and 1989 and the subsequent ideological rethniclation. (SP) Wakeman

250. Investigative Reporting. (4) Course may be repeated for credit with consent of instructor. Three hours of lecture/discussion and eight hours of field work per week. Prerequisites: For journalism students, 200 or equivalent; for others, consent of instructor. Study of investigative reporting, analysis of its technique with outside reporting assignments. (F.S.P) Staff

251. Reporting as Literature. (3) Course may be repeated for credit with consent of instructor. Three hours of lecture/discussion per week. A study of outstanding examples of journalistic literature. (F.S.P) Staff

252. Magazine Article Writing. (3) Course may be repeated for credit with consent of instructor. Three hours of lecture/discussion and eight hours of field work per week. Prerequisites: For journalism students, 200 or equivalent; for others, consent of instructor. Study and analysis of the techniques of writing and editing of articles for publication. (F.S.P) Staff

254. Opinion Writing. (2-4) Course may be repeated for credit with outside time in the courts. Examination of the structure and philosophy of the legal system to prepare the journalist for reporting legal affairs. (F.S.P) Staff

257. Radio News Reporting. (4) Four hours of lecture/discussion and four hours of field and laboratory work per week. Study of techniques, practices, and methods of gathering and writing radio news. Students will produce weekly live radio news programs. Enrollment is limited to 15. (F.S.P) Drummond, Staff

282. Introduction to Television News. (4) Four hours of lecture/discussion, fifteen hours of laboratory per week and some field work. Study of the history and principles of broadcast journalism (nine weeks), practice, techniques of reporting news for radio and television. (F) Bieder, Calo, Staff

283. Reporting for Television. (5) Six hours of lecture/discussion and twenty-four hours of laboratory/work per week. Prerequisites: 282 and consent of instructor. Producing, directing, writing, and videotaping of live weekly television news program. (SP) Bieder, Calo, Staff

284. Documentary Production. (4) Three hours of lecture and twelve hours of laboratory/work per week. Prerequisites: 282, 283, and consent of instructor. Production of television documentary news programs. (F.S.P) Else

285. Advanced Television Reporting: Longform Television. (4) Three hours of lecture, and fifteen hours of laboratory/work per week. Prerequisites: 282, 283, and consent of instructor. Reporting and production of television news magazine stories and programs. (F.S.P) Bieder, Calo

286. History of Documentary. (3) Three hours of seminar per week. This course covers the evolution of American documentary film from 1920 to the present, with special attention to independent productions and documentaries for network television. In the works of Fred Block, Henry Hampton, Errol Morris, Marlon Riggs, Barbara Kopple, Orlando Bagwell, the Maysles, and the network staff producers, we look at the practical problems of making documentaries for a mass audience. (Required for J-School students who are concentrating specializing in documentary.) (SP) Else

287. Inside Frontline. (1,2) Two hours of seminar for ten weeks. This seminar course provides students with the opportunity to meet with and discuss projects with Frontline producers and reporters. Each session will focus on a single documentary in-depth look on the development of the story out of an idea, the journalistic approach and methods used by the team, the process of finding and creating the approach, dramatic structure, and public impact and critique of the program. (SP) Staff

288. Digital TV and the World. (3,4) Course may be repeated for credit. Three hours of lecture and nine hours of laboratory per week. Prerequisites: Journalism students only and consent of instructor. Students not enrolled in the TV cycle who wish to learn essential techniques and examine new reporting forms are invited to apply for this experimental class. Students learn the basics of TV reporting, how to cover a slice of life in America or abroad, and produce thoughtful works for distribution on the web and on the air. Students learn the rudiments of digital production, reporting, and editing. The course will emphasize solid
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reporting, clear expression, and original storytelling. (F,SP) Staff

290. Editing Workshop. (2,3) Course may be repeated for credit with different topic and consent of instructor. Two to three hours of seminar and individual meetings per week. Prerequisites: Journalism students only; priority to second-year students completing master’s project. It can take a lifetime of writing to learn how to critique and revise your work. Hard as writing can be, it can also bring back into your writing framework, rethinking, re-imaging, and revising—can be harder yet. Sometimes only an editor can help you gain the distance needed to view your work. No matter how good a journalist you may be, an editor can help you reach another stage in your writing process. (F,SP) Staff

294. Master’s Project Seminar. (1-2) One hour of seminar per week. Prerequisites: 200 and consent of instructor. Group meetings plus individual tutorials. Methods of research, organization, and preparation of professional thesis projects. Required of M.J. candidates working on thesis projects during both fall and spring semesters. (F,SP) Staff

297. Field Study in Journalism. (1-2) Course may be repeated for credit. Field study. Must be taken on a satisfactory/unsatisfactory basis. Supervised experience in the practice of journalism in off-campus organizations. Individual meeting with faculty sponsor and written report required. See Additional Information, “Field Study and internships.” (F,SP) Staff

298. Group Study—Special Topics. (2-4) Course may be repeated for credit as topic varies. Two to three hours of group meeting per week. Specialized seminar topics in reporting and writing. (F,SP) Staff

299. Individual Study. (1-3) Course may be repeated for credit. Individual study. Supervised individual study and research. (F,SP) Staff

Landscape Architecture and Environmental Planning
(College of Environmental Design)

Department Office: 202 Wurster Hall, (510) 642-4022
laep.ced.berkeley.edu
Professors
Peter C. Bosselmann, M.Arch. Urban design
Randolph T. Hester Jr., M.L.A. Community participation, neighborhood design
Walter J. Hood Jr., M.Arch., M.L.A. Community design, landscape design, site planning
Linda L. Jewell, B.Arch., M.A. Relationship of design and construction technology
Joe R. McBride, Ph.D. Vegetation and ecological analysis
Michael Southworth, Ph.D., M.C.P., B.Arch. Urban design and planning
Charles H. (Chip) Sullivan, M.L.A. Landscape design and art, graphics
Clare Cooper Marcus (Emerita), M.A., M.C.P. Social planning and open space
Richard L. Meier, M.L.A. History and design
Robert H. Twiss (Emeritus), Ph.D. Regional planning assessment, public land management

Associate Professors
Timothy R. Duane, M.S., Ph.D. Energy and environmental planning
G. Mathias Kondolf, Ph.D. Applied geomorphology and hydrology, environmental planning
Louise A. Mozingo, M.L.A. History and design
John D. Matthews, Ph.D. University of British Columbia. Geography, geographical information systems in landscape and environmental planning

Assistant Professor
Judith Stilgenbauer, M.L.A. Design theory and practice, digital technology application, plants design

Adjunct Professors
Marcia McNally, M.C.P. Community participation, landscape design
David Meyer, B.S. Landscape architecture

The Profession
The profession of landscape architecture plays an important role in solving environmental problems through design and planning. Professional practice includes design of public spaces for recreation areas, schools, playgrounds, neighborhoods, parks, and cities, planning for conservation of open space and natural amenities, land management and development, and assessment of the impact of projects and proposals on environmental, and design of such projects to be environmentally compatible. Landscape design typically involves project programming, site planning of buildings and building complexes, and analysis, planning, and detailed design of public and private exterior spaces and landscapes. It requires an understanding of visual and social factors, plant materials, construction technology, cost, and ecology.

Environmental planning is concerned with the larger context of natural and urban environments including the principles of ecology, conservation planning, environmental law, resource development, computer applications, recreation planning, and urban open space and transportation systems. The intent of all phases is the design of delightful landscapes that are ecologically sound and socially informed.

Undergraduate Program
The four-year curriculum leading to the A.B. degree with a major in landscape architecture provides a general education in environmental design and serves as preparation for subsequent graduate education or entry-level work in the field. The emphasis is on design and research. UC students who earn the A.B. degree will become eligible to take the state examination after fulfilling a three-year apprenticeship under a licensed landscape architect. Required core courses represent a minimum basic coverage in theory, design, and technology, but the program provides an opportunity to study more intensively all aspects of landscape architecture, including landscape analysis and planning, urban design, recreation, site design and development, graphics, construction, and planning design. For more complete information, see the Announcement of the College of Environmental Design.

Graduate Program
The Master of Landscape Architecture Degree. The Master of Landscape Architecture degree is a professional degree accredited by the American Society of Landscape Architects. The program offers advanced work in landscape architecture from the scale of detailed form to that of the regional landscape. A core of courses in the department is required of all students, emphasizing the relationship between the design and the environmental planning aspects of the field. This core group forms the foundation for the intended coursework in landscape design, urban and community design, and environmental planning.

Current faculty research and professional involvement include growth impact and land use planning, human factors and design, environmental simulation and simulation and scenic assessment, ecological art, ecology and plant succession, hydrology and planning, cultural geography, the educative city, energy conservation in landscape and community university timber, forest, and community participation in design and planning.

Concurrent Program in Urban Design or Environmental Planning. The Departments of Landscape Architecture and Environmental Planning, and City and Regional Planning jointly offer a program of studies in urban design or in environmental planning, leading to both the Master of Landscape Architecture and Master of City and Regional Planning degrees. Applicants to the concurrent degree program typically have an undergraduate degree in landscape architecture or architecture. Applicants must be admitted separately by both the Department of Landscape Architecture and Environmental Planning and the Department of City and Regional Planning. More information may be obtained from the Graduate Office in 202 Wurster Hall, or from our web site at laep.berkeley.edu.

Concurrent Degree Program in Architecture and Landscape Architecture. The Departments of Architecture and Landscape Architecture and Environmental Planning have developed a concurrent degree program. This program will lead to two professional degrees: Master of Architecture and Master of Landscape Architecture. This new program brings together two closely connected branches of environmental design—the design of sites and the design of buildings. This program is for exceptionally qualified students who have an undergraduate degree in architecture or landscape architecture and who satisfy the admission requirements of the one- or two-year M.L.A. program and/or the two-year M.L.A. program. Applicants to either of the above concurrent degree programs should apply to the Department of Landscape Architecture and City and Regional Planning by December 15. Acceptance into the concurrent degree program is limited to outstanding applicants. More information may be obtained from the Graduate Office in 202 Wurster Hall or from our web site.
Lower Division Courses

39. Freshman/Sophomore Seminar. Course may be repeated for credit as topic varies. Seminar format. Prerequisites: Priority given to freshmen and sophomores. Freshman and sophomore seminars offer lower division students an opportunity to explore an interdisciplinary topic with a faculty member and a group of peers in a small-seminar setting. These seminars are offered in all campus departments; topics vary from department to department and from semester to semester.

84. Sophomore Seminar. (1,2) Course may be repeated for credit as topic varies. One hour of seminar per week per period for one semester. One hour of seminar per period for two semesters. Three hours of seminar per week per period for five weeks. Sections 1-2 to be graded on a passed/not passed basis. Sections 3-4 to be graded on a letter-grade basis. Prerequisites: At discretion of instructor. Sophomore seminars are small interactive courses offered by faculty members in departments all across the campus. Sophomore seminars offer opportunity for close, regular intellectual contact between faculty members and students in the crucual second year. The topics vary from department to department and semester to semester. Enrollment limited to 15 sophomores. (F,SP)

98. Directed Group Study for Freshmen and Sophomores. (1-4) Course may be repeated for credit. Enrollment is limited to Introduction to Vectors and Curricula section of this catalog. One to four hours of directed group study per week. Must be taken on a passed/not passed basis. Prerequisites: Department chair must approve written proposal. Supervised group studies of various topics relevant to department that are not covered in depth by other courses. Topics may be initiated by students. Open to students in good standing. Seminar format with a faculty sponsor, present a proposal with clearly formulated objectives and means of implementation. Intended for exceptional students. Topics vary from semester to semester. (F,SP)

Upper Division Courses

101. Fundamentals of Landscape Design. (5) Two hours of lecture and six hours of studio per week. Prerequisites: Environmental Design 11A-11B or consent of instructor. This studio introduces students to the programmatic, artistic, and technical aspects of land form and topographic adjustments to accommodate human use. Topics include pedestrian and vehicular circulation, conservation and addition of plant materials, movement of water, recreation use, and creation of views. Sculptural land forms will be emphasized through the use of plans, sections, and contour models. (F) J. Stilgenbauer, D. Meyer

102. Case Studies in Landscape Design. (5) Two hours of lecture and six hours of studio per week. Prerequisites: 101 or consent of instructor. This studio stresses the shaping and coordination of ideas from initial concept to complete design product. A product(s) of intermediate scale and complexity (such as a garden, small park, plaza, or campus courtyard) will be developed in detail including the selection of planting, selection of hardscapes, and topographic design. Lecture modules on selected professional topics are integrated into this course. (SP) Mozingo/Staff

103. Energy, Fantasy, and Form. (5) Three hours of lecture and six hours of studio per week. Prerequisites: 101, 102, Environmental Design 11A-11B, or consent of instructor. This studio will take an undergraduate studio course and add the central focus on climate modification for energy conservation. We will research historical precedents in order to develop new garden forms for passive green designs. Students will create a three-dimensional form that may still past clients, as the use of integrated metaphysics into their gardens as an adjunct to microclimate and habitat design. The contemporary landscape should be a balanced intertwewing of proportion, function, comfort, energy conservation, and enlightenment. The studio will study the changing geography of space and investigate how to animate the landscape through the creative interpretation of text and film. Many new and exciting opportunities lie ahead for the creation of garden forms that not only conserve energy, but are also works of art and places of spiritual renewal. (F) Sullivan

110. Ecological Analysis. (4) Three hours of lecture and two hours of studio per week. Study of environmental factors, ecosystem functions, and ecosystem dynamics, as related to decision-making for landscape planning and design. (F) McBride

111. Plants in Design. (3) Three hours of lecture per week. Prerequisites: 101, Environmental Design 11A-11B or consent of instructor. Through lecture, research, and studio assignments, this course introduces the use of plants as design elements in the landscape, from the urban scale to the site-specific scale, focusing on our eight-week class in historic, contemporary, and Bay Area examples, the course examines the spatial, visual, and sensory qualities of vegetation, as well as the interplay with ecological functions and engineering uses of plants. (F) Stilgenbauer

112. Landscape Plants: Identification and Use. (4) Two hours of lecture and six hours of fieldwork per week. This course is an introduction to the identification and recognition, as well as design applications and uses, of plants in the landscape. Through lectures, assignments, and fieldwork, the course provides class participants with an understanding of the importance of vertical vegetation as a design element. Students will be introduced to a variety of built projects and plants commonly used in Bay Area landscapes. (SP) Stilgenbauer

120. Topographic Form and Design Technology. (2) One hour of lecture and one hour of laboratory per week. Prerequisites: 102 or consent of instructor. Technical, graphic and computational exercises, and studio problems in topographic site design and the shaping of the site for surface use. (F,SP) Stilgenbauer

121. Design in Detail: Introduction to Landscape Materials and Construction. (4) Three hours of lecture and one hour of laboratory per week. Prerequisites: 101, Architecture 100A, or consent of instructor. This course introduces the visual and physical characteristics of landscape construction materials including, but not limited to, stone, brick, concrete, metal, asphalt, and wood. Additionally, lectures cover the production and availability of these materials, any existing evaluations on their sustainability, and their potential impact on the immediate environment. Students also learn to utilize standard sources of information on building materials and the terminology typically utilized when choosing and identifying materials. They become familiar with dimensional standards for landscape structures, including pavements, stairs, furnishings, retaining walls, freestanding walls, fences, decks, and small overhead structures. (SP) Jewell

130. Introduction to Landscape Architecture. (3) Three hours of lecture and four hours of studio per week. This course introduces the student to the concept of landscape architecture as it has evolved as an expression of people, time and place, including the garden, parks, and public open spaces. Land use planning and environmental protection, decision of design process plans and planning methods, materials, and techniques of professional practice. (SP) Brooke

132. Computer Applications in Environmental Design. (4) Three hours of lecture and three and one-half hours of laboratory per week. This course introduces students to the use of computer-aided Landscape Architecture and Environmental Design. It develops applied computing skills in Web publishing, Computer Aides Design (CAD), image scanning, and Geographic Information Systems (GIS). Students will be introduced in the first half of the semester and includes: 2D and 3D modeling, object rendering, integration of images, fly-through movies, and solar studies. The rest of the semester will focus on 3D modeling and virtual modeling by integrating support information from geographic information systems (GIS), digital ortho-photos (DOP/DOQ), and global positioning systems (GPS). Lecture time is spent discussing problems and solutions of data, acquisition, accuracy, representation, modeling, and communication in landscape design. The lab/studio seeks innovative application of technology to medium- to large-scale landscape design problems. The focus of the lab/studio varies from semester to semester, but typical topics include garden design, neighborhood design, open space design, and others. (F) Radke

134A. Drawing Workshop 1. (3) Two hours of lecture and three hours of studio per week. Prerequisites: Environmental Design 11A-11B or consent of instructor. This studio will elaborate on a number of studio concepts introduced in the first part of graphic mediums and drawing techniques. Measured drawing procedures (including orthographic projections) will be augmented by figure-ground principles and themes of contrast, color, chiaroscuro, and compositions. On-site and visits to galleries and museums will complement the studio sessions. (F) Hood

134B. Drawing Workshop II. (2) Two hours of lecture and two hours of laboratory per week. Prerequisites: Environmental Design 11A-11B or consent of instructor. Continuation of studio themes and as exercises in projection drawings and sectional strategies. Expressionist modes of graphic communication will augment measured drawing procedures (color, collage, figuration, layering, etc.). (SP) Hood

135. The Art of Landscape Drawing. (3) Two hours of lecture and four hours of studio per week. This course develops freedom of the hand as part of the creative process and as an expressive design tool. A broad range of exercises is employed to help students progressively gain creativity, skill, and confidence in hand and eye. In addition, there will be excursions to art galleries, artists' studios, and other creative environments. Through the integration of drawing with intuition and imagination, students will be able to bring their visions to reality. (SP) Sullivan

136. Advanced Landscape Delineation. (3) Two hours of lecture and four hours of studio per week. Imagination is the foundation for creative expression in the landscape. This course encourages exploration and personal expression for the realization of new landscape forms. This laboratory intends to refine drawing compositional skills by fostering imagination, intuition, and creativity. The media explored will be pen and ink, watercolor, collage, and 3-dimensional construction. We will study the human figure through analytical drawings and live models. The realms of moving images, the landscape of the animated cartoon, and the sequential art of the comic will be investigated. (F,SP) Sullivan

140. Social and Psychological Factors in Open Space Design. (3) Three hours of lecture and one hour of discussion per week. User-oriented approach to design. Post-occupancy evaluation as a tool for understanding use of designed open spaces. Design as a communication process. Environmental needs of vulnerable populations—children, elderly, disabled, low-income families. Personal and societal environmental values. (F) Staff

141AC. The American Landscape: Multicultural Diversity. (3) Three hours of lecture and one hour of discussion per week. This course will compare and contrast the nature of African American, American Indian, and European American relationships with the American Landscape. Patterns of land use within each subculture will be explored, and juxtaposed against prevailing theory and ideology. Social patterns of use, perception, attached meaning and sense of place, and the transformation of the environment as the result of social change are some of the topics to be discussed. This course satisfies the American Cultures requirement. (F) Hood

154. Special Topics in Landscape Architecture and Environmental Planning. (1-3) Course may be repeated for credit. One to three hours of seminar per week. Designed to be a forum for presentation of student research, discussions with faculty researchers and practitioners, and examination of topical issues in
landscape architecture and environmental planning. Topics will be announced at the beginning of each semester. (F,SP) Staff

160. Professional Practice Seminar. (3) Three hours of seminar per week. Prerequisites: 161 or graduate standing. Analysis of professional practice in landscape architecture focusing on: the context of professional practice—office structure, public, private and non-profit practice, marketing, project management, day-to-day legal parameters of practice, contracts, codes, planning regulations, project approval processes, liability; and economics—budgeting, profits, project development costs, fiscal impacts, and financing. (SP) Staff

170. History and Literature of Landscape Architecture. Three hours of lecture per week. This course surveys the history of landscape architecture in four realms: 1) gardens; 2) urban open space, that is, plazas, parks, and recreation systems; 3) urban and suburban design; and 4) regional and environmental planning. The course will review the cultural and social contexts which have shaped and informed landscape architecture practice and aesthetics, as well as the environmental concerns, horticultural practices, and technological innovations of historic landscapes. (F) Mozingo

171. The American Designed Landscape Since 1850. (3) Three hours of lecture per week. This course surveys the history of American landscape architecture since 1850 in four realms: 1) urban open space—that is, squares, plazas, parks, and recreation systems; 2) urban and suburban design; 3) regional and environmental planning; and 4) gardens. The course will review the cultural and social contexts which have shaped landscape architecture in the United States since the advent of the public parks movement, as well as the aesthetic precepts, environmental concerns, horticultural practices, and technological innovations of American landscapes. Students will complete a midterm, final, and a research paper. (SP) Mozingo

C171. The American Designed Landscape Since 1850. (3) Three hours of lecture per week. This course surveys the history of American landscape architecture since 1850 in four realms: 1) urban open space—that is, squares, plazas, parks, and recreation systems; 2) urban and suburban design; 3) regional and environmental planning; and 4) gardens. The course will review the cultural and social contexts which have shaped and informed landscape architecture in the United States since the advent of the public parks movement, as well as the aesthetic precepts, environmental concerns, horticultural practices, and technological innovations of American landscapes. Students will complete a midterm, final, and a research assignment. Also listed as American Studies C171. (SP) Mozingo

C188. Geographic Information Systems. (4) Three hours of lecture and two hours of laboratory per week. Prerequisites: Some computer experience. Formerly C188X. This course introduces the student to the rapidly expanding field of Geographic Information Systems (GIS). It addresses both theory and applications and provides the student with a dynamic analytical framework within which temporal and spatial data and information is gathered, integrated, interpreted, and manipulated. It emphasizes a conceptual appreciation of GIS and offers an approach to apply one of those concepts to contemporary geographical and planning issues. Also listed as Geography C188. (F) Radke

197. Field Study in Landscape Architecture. (2-3) Hours lecture and six hours of laboratory per week. Prerequisites: Upper division standing and consent of instructor and sponsor. See department information sheet for limitations. Supervised field work outside normal hours. Reports required. (F,SP) Staff

198. Directed Group Study. (1-4) No more than 4 units allowed each semester. Course may be repeated for credit. Hours to be arranged. Must be taken on a passed/not passed basis. Prerequisites: Upper division standing and consent of instructor and sponsor. See department information sheet for limitations. Supervised experience directed to specific aspects of landscape architecture. Regular individual meetings with faculty and outside sponsor. Reports required. (F,SP) Staff

206. Final Project Preparation Studio: Thesis and Reports. (3) Three hours of lecture and six hours of studio per week. Prerequisites: 252 and graduate standing. For thesis writing & design. Work on final projects (theses and professional reports). The studio, including lectures by the instructor, is meant to train and assist students in thesis or professional project research and to help them finalize their thesis or professional report topic. The course includes weekly exercises ranging from writing articles documenting, illustrating, and critiquing landscapes to finally producing a thesis or professional report. (SP) Staff

210. Restoration of Aquatic Ecosystems. (2) Two hours of lecture and three hours of studio per week. Prerequisites: 222 or 227, or Civil Engineering 113, or Environmental Science, Policy, and Management 115B, or consent of instructor. Interdisciplinary course taught in conjunction with Civil and Environmental Engineering 210N, for students who intend to work in areas of damaged ecosystems, supervise actual restorations or enhancement, and also students who are simply interested in this field. The course emphasizes differences and similarities in restoration goals and methods among wetlands, rivers, lakes, and estuaries, and coastal oceans. The course format is based on the Dahlem system where students prepare and present orally and in writing, one or two aspects, to culminate with an all-day conference on aquatic restoration/enhancement. Offered alternate years. (SP) Kondolf

212. Landscape Ecology. (3) Three hours of lecture and one five-hour field trip per week. Prerequisites: Graduate standing, 110 or equivalent, consent of instructor. Concepts of landscape ecology and their application to environmental planning. Topics include landscape structure, biotic diversity, species flow, redistribution of nutrients and toxic elements, energy flow, landscape change, and landscape management. (F,SP) McBride

213. Quantitative Methods in Environmental Planning. (3) One and one-half hours of lecture and three hours of laboratory per week. Discussion and critique of the application of quantitative methods to environmental assessment, and decision making in environmental planning. Topics include geographical information systems and data bases, remote sensing, and multivariate analysis. This course emphasizes computer applications and data analysis. (SP) Radke

222. Hydrology for Planners. (4) Three hours of lecture and two hours of laboratory per week, plus three days of weekend field trips. This course presents an overview of relevant hydrologic, hydraulic, and geomorphic processes, to provide the planner and ecological specialist with a sufficient technical background in the field of hydrology. In addition, relevant regulations and policies are reviewed. (SP) Kondolf

225. Urban Forest Planning and Management. (3) Three hours of lecture per week plus two one-day field trips. Introduction to the field of urban forestry, its history, and its role in contemporary towns and cities. Emphasis on planning and management of the urban forest, restoration of old parks, street trees, and community participation. Offered alternate years. (SP) McBride

226. Landscape Design Construction. (2) Three hours of studio per week. May be taken concurrently. The course investigates the process of developing schematic landscape design proposals into constructed landscapes. Emphasis will be placed on understanding the materials and design details, the efficient use of materials, and the ability to evaluate how material selection and detailing can impact the environment. Field trips to construction sites, and local manufacturing facilities, and built landscapes will be included. (SP) Jewell

227. Restoration of Rivers and Streams. (3) Three hours of seminar per week. Prerequisites: 220, 222, 201 (or comparable course work), Environmental Science, Policy, and Management 115A, or Geology 117 with consent of instructor. Course reviews under- lying goals and assumptions of river and stream restoration projects, reviews techniques employed in these efforts, and emphasizes strategies for evaluation

*Professor of the Graduate School
†Recipient of Distinguished Teaching Award
of project success. The course focuses on geographic and hydrologic analyses relevant to restoration and enhancement of aquatic and riparian habitat in freshwater systems, with applications to the study, design, and management of aquatic landscapes. Students will present the results of their independent research projects, and final reports will be presented in the seminar, accompanied by a 2-page handout. (FSP) Kondolf

228. Research in Environmental River Planning, Management, and Restoration. (1) Course may be repeated for credit as topic varies. One to three hours of lecture/seminar per week. Designed to be a forum for presentation of student research, discussions with faculty researchers and environmental planning practitioners, and examination of the impact of emerging trends in environmental planning and design. Topics will be announced at the beginning of each semester. (FSP) Staff

229. Mediterranean-Climate Landscapes. (1-3) One to two hours of lecture/seminario studio per week. Comparative study of environmental conditions and human responses to California and other Mediterranean-climate regions, with intensive treatment of a topic in environmental sciences, policy, planning, management, and/or landscape architecture, with applications to California, Portugal, or other Mediterranean-climate regions. Students will conduct and analyze relevant data, synthesize, and complete technical reports, plans, and/or design. Also listed as International and Area Studies C251. (FSP) Kondolf

C231. Environmental Planning and Regulation. (3) Three hours of lecture per week. This course will examine emerging trends in environmental planning and policy and the basic regulatory framework for environmental planning encountered in the U.S. The course will also address the international and policy frameworks of California and the United States to other nations and emerging international institutions. The emphasis of the course will be on regulating “residuals” as they affect three media: air, water, and land. Also listed as City and Regional Planning C242. (F) Duane

232. The Landscape as a Sacred Place. (3) Two hours of lecture per week and bi-weekly field trips (total of three days). Visual and cultural analysis of landscapes, inventory procedures for “place” values, and problems related to land use and design development, with special emphasis on highly valued places. Offered every third year. (SP) Hester

235. Environmental Simulation and Public Communication. (2-4) Two hours of lecture and six hours of laboratory per week. Introduction to the theory of experimental simulation; criteria for a good presentation; case studies in the use of models and media in citizen participation and environmental design. (SP) Bosselmans

236. Advanced Seminar in Land Use and Environmental Planning. (3) Course may be repeated for credit. Three hours of lecture per week. An advanced investigation of current problems in land use and environmental management, with a focus on the development of proposed policy responses and implementation strategies. Topics will vary from year to year. Likely topics include: the regulation of sensitive lands; environmental impact assessment; the regulation of design; supra-local land use controls; water resources law and policy; public lands; coastal and bayside management; hazardous lands; resource extraction. Offered every third year. (SP) Staff

237. The Process of Environmental Planning. (3) Students will receive no credit for C237 after taking Landscape Architecture 237. Three hours of lecture per week. Prerequisites: C231/Landscape Architecture C251. A review of the techniques used in environmental planning, and evaluation of alternate means of implementation in varying environmental and political circumstances. The class will examine and critique a number of well-known environmental planning programs and plans. Lectures and discussion will address the components, structure, and meaning of the urban environment. Environmental problems, attitudes, and criteria. Environmental survey, analysis, and interview techniques. Methods of addressing environmental, social, and economic quality. Environ- mental planning, and Regional Planning C215. (FSP) Duane


C242. Citizen Involvement in the City Planning Process. (3) Students will not receive credit for C242 after taking City and Regional Planning 208, Interdepartmental Studies 206 Fall 1990, and Interdepartmental Studies 206 Fall 1991. Three hours of lecture/seminar per week. Formerly Interdepartmental Studies 223. An examination of the roles of the citizens and citizen organizations in the city planning process. Models for establishing citizen involvement, including the role of city council in advising to community control. Examination of the effectiveness of different organizational models in different situations. Also listed as City and Regional Planning C261. Hester, McNally

C250. Theories of Urban Form and Design. (3) Three hours of lecture per week. Prerequisites: Consent of instructor. Theories and patterns of urban form throughout history are studied with emphasis on the role of planning and design in shaping cities and the relationship between urban form and social, economic, and geographic factors. Using a case study approach, cities are evaluated in terms of various theories and performance dimensions. Also listed as City and Regional Planning C240. (FSP) Southworth

251. Theories of Landscape Architecture and Environmental Planning. (2) Two hours of seminar per week. The focus will be on debate and discussion of central ideas in landscape architecture and environmental planning, drawing on primary literature over many decades of thought. This is not a history course, but it will include some literature that goes back to the early years of the field. This course covers the breadth of thinking in the field, including both environmental planning and landscape design as well as other sub-disciplines. Each week is a debate on one topic of a different theoretical issue. (SP) Mozingo/Southworth

252. Thesis and Professional Project Research Seminar. (2) Two hours of lecture/discussion per week. Must be taken on a satisfactory/unsatisfactory basis. Approaches to research methods, including the case study, the survey, the history of the historical or theoretical study. The course will include a number of brief writing exercises directed toward the development of a thesis or professional project proposal. (FSP) Southworth

252A. Thesis and Professional Project Proposal Seminar. (2) Two hours of seminar per week. Prerequisite: Proposal must be submitted prior semester and approved by LAEP Curriculum Committee. Students learn research methods including social factors, historical/archival, design exploration, master planning, theoretical, and scientific field work. Students develop a conceptual framework, survey instrument, literature review, and detailed work plan. A full committee and funding proposal due on the last day of class. (SP) Staff

252B. Thesis and Professional Project Proposal Seminar. (2) Two hours of seminar per week. Prerequisite: 252A. Students learn research methods including social factors, historical/archival, design exploration, master planning, theoretical, and scientific field work. Students develop a conceptual framework, survey instrument, literature review, and detailed work plan. A full committee and funding proposal due on the last day of class. (FSP) Staff

253. Landscape Architecture and Environmental Planning Colloquium. (1) Course may be repeated for credit. One and one-half hours of lecture per week. Invited lecturers on current research, planning practice, and design projects. Offered every third year. (SP) Staff

254. Topics in Landscape Architecture and Environmental Planning. (1-3) Course may be repeated for credit as topic varies. One to five hours of seminar per week. Designed to be a forum for presentation of student research, discussions with faculty researchers and environmental planning practitioners, and examination of topics in landscape architecture and environmental planning. Topics will be announced at the beginning of each semester. (FSP) Staff

255. Doctoral Seminar in Environmental Planning. (1) Course may be repeated for credit. Must be taken on a satisfactory/unsatisfactory basis. Prerequisites: Doctoral student or consent of instructor. Designed to be a forum for presentation of doctoral student research, discussions with faculty researchers and environmental planning practitioners, and examination of topics in landscape architecture and environmental planning. Topics will be announced at the beginning of each semester. (FSP) Staff

256. Special Topics in Social Factors in Landscape Architecture. (1-3) Course may be repeated once for credit if the topic varies. One to three hours of seminar per week. Research Seminar on selected topics in social factors in landscape architecture. Students will focus on the interaction of landscapes and human societies as well as social science methods appropriate to landscape analysis. Seminars will include lectures by the faculty member offering course, student presentations and discussions. Readings and requirements vary year-to-year based on the topic and instructor. (FSP) Staff

257. Special Topics in Design. (1-3) Course may be repeated for credit as topic varies. One to three hours of seminar per week. Prerequisites: Graduate standing or consent of instructor. Research seminar on selected topics in landscape design. Seminars will focus on the theoretical foundations and practical applications of design and planning methods as well as emerging issues in the discipline. Seminars will include lectures by the faculty member offering the course, guest lecturers, student presentations, and discussions. Readings and requirements vary from year to year based on the topic and instructor. (FSP) Staff

258. California Water: An Interdisciplinary Seminar. (1) Course may be repeated for credit as topic varies. Three hours of seminar every other week. Must be taken on a satisfactory/unsatisfactory basis. This seminar studies California water issues from an interdisciplinary perspective, building upon the established California Colloquium on Water, to increase understanding and appreciation of water resources and contribute to informed decision-making about water in California. Each semester four distinguished scholars in the fields of humanities, natural sciences, engineering, social sciences, law, and environmental design present lectures to students, faculty, and the general public. Students in the seminar attend the colloquium lectures, complete background readings, and may attend for two hours on alternate weeks in the seminar session to discuss issues raised by the colloquium presentations and related readings. Course requirements: attendance at colloquium and seminar, participation in class discussions, writing term papers, course review meetings, and completion of a colloquium project. (FSP) Staff

270. The Urban Park. (2) Two hours of seminar/discussion per week. Review of the origins and development of the public park as a component of cities. Particular emphasis will be given to contemporary issues of conservation, changing uses and expectations, and future directions. Offered in odd-numbered years. (SP) Staff
Professional Courses

300. Supervised Teaching in Landscape Architecture and Environmental Planning. (2) Course may be repeated for credit. Hours to be arranged. Must be taken on a satisfactory/unsatisfactory basis. Prerequisites: Graduate standing and appointment as a Teaching Assistant. Supervised teaching experience in undergraduate courses. Regular meetings with faculty sponsor. See departmental sheet for other limitations. (F,SP) Staff

301. Methods of Teaching in Landscape Architecture and Environmental Planning. (2) Two hours of seminar/discussion per week. Must be taken on a satisfactory/unsatisfactory basis. Prerequisites: Graduate student standing. This course presents general pedagogical principles adapted to teaching in the fields of landscape architecture, environmental planning, and environmental sciences. The format varies from week to week, but involves presentations by faculty and experienced graduate student instructors (GSIs), guided discussions, sharing of teaching experiences for current GSIs, discussion of readings on effective teaching, viewing of videos, and presentation by GSIs of sections for upcoming weeks. Required of all graduate students to be eligible for appointment as GSIs; may be taken concurrently with first GSI position for entering students. Topics include learning objectives, lesson plans, active learning, group learning, classroom diversity, assessing student learning, giving feedback, teaching in the studio environment, engaging students through field exercises, grading, and composing effective tests. (F,SP) Staff

Latin American Studies

(College of Letters and Science)

Group Major Office: International and Area Studies, 101 Stephens Hall, iastp@berkeley.edu, (510) 642-4466

Chair: Estelle Tarica

Faculty Advisers
Miguel Aliber (Environmental Science, Policy, and Management)
Emile Bergmann (Spanish and Portuguese)
Irene Bloomfield (Highlights Staff)
Carolyn Blum (Law)
Shanele Brandes (Architecture)
Natalia Brizuela (Spanish and Portuguese)
A. Roger Boyne (Geography)
Claudia Carr (Environmental Science, Policy, and Management)
Manuel Castilotto (Sociology/City and Regional Planning)
Ignacio Chapela (Environmental Science, Policy, and Management)
Lydia Chavez (Journalism)
Margaret Chowning (Anthropology)
Vévé Clark (Architecture)
Ruth Berns Collier (Political Science)
Rene Davids (Architecture)
Alain de Janvry (Agricultural and Economic Resources)
Laura Enriquez (African American Studies)
Peter Evans (Sociology)
Paul Gersdorff (Environmental Science, Policy, and Management)
Sylvia Guendelman (Public Health)
William Hanks (Ecology)
Christine Hastorf (Anthropology)
Corey Hayden (History)
Mark Healey (History)
Perry Hintzen (African American Studies)
Michael Johns (Geography)
Rosemary Joyce (Anthropology)
Michel Laguerre (African American Studies)
Linda Lewin (History)
Peter Marcus (African Studies and Social Welfare)
Beatriz Manz (Chicana Studies/Geography)
Francisco Mejia (Spanish and Portuguese/Comparative Literature)

Courses Outside L&S. No more than three courses outside the College of Letters and Science may be used to satisfy requirements in both majors. Students are reminded that: 1) no coursework for the major can be taken on a passed/not passed basis, and 2) no course may be used to satisfy more than one major requirement.

Minor. Latin American Studies does not offer a minor or program. Courses taken in conjunction with Latin American Studies are encouraged. No more than one upper division course can be used to satisfy requirements in both a major and a minor.

Double Majors. Double majors must be approved by the College of Letters and Science. No more than two upper division courses may be used to satisfy requirements in both majors.

Courses Outside L&S. No more than three courses outside the College of Letters and Science may be used to fulfill group major requirements.

Study Abroad. The use of coursework taken at institutions outside the United States to fulfill major requirements is restricted to the equivalent of three semester-length upper division courses. However, courses taken to fulfill the foreign language requirement and lower division prerequisites for the group major are not included in this restriction.

Transfer Courses. A maximum of three upper-division courses taken at other institutions (including those of the Education Abroad Program of the University of California) may be transferred into the major; these courses will be accepted only as three of the nine required upper division courses (regardless of unit value) and must be validated by the Office of Undergraduate Admissions and approved by the chair. The courses used to fulfill foreign language and lower division prerequisites are not included in this restriction, but must be approved by an advisor.
Honors Program. To graduate with honors from the group major in LAS, students must enroll in the two-semester honors seminar, IAS 102 (fall only) and LAS H195 (spring only), and must maintain grade-point averages of 3.6 in the major and 3.5 in overall university coursework. The honors seminar is taken in addition to a student's regular coursework for fulfilling requirements for the major and culminates in the writing of a senior thesis. The thesis is read by the LAS H195 instructor and at least one other faculty member who is selected by the student in consultation with the thesis instructor. Eligibility for participation in the Honors Program must be checked in the IAS office. Important note: There is no guarantee that students accepted into the honors program will graduate with honors. Honors recommendations for graduate students are based on a number of factors including but not limited to major GPA, grades received for IAS 102 and LAS H195, and faculty advisor recommendations.

Course Plan
The considerable flexibility within the Latin American Studies major encourages students to construct a program appropriate to their specific intellectual and geographic interests. The overarching structure of the major, however, presumes that each student has a three-tiered program. First, all lower division courses are completed in which LAS 10, Introduction to Latin American Studies, is required. Second, language proficiency in either Spanish or Portuguese is required. Students choose one of these languages as their primary language and complete coursework equivalent to four college-level semesters. The secondary language requirement is met through coursework equivalent to two college-level semesters. Third, no fewer than 30 units in upper division coursework are required, including two Latin American literature/culture courses, two Latin American history courses, and five elective courses through which the student builds a working knowledge of the culture, history, literature, and society of Latin America. These courses are chosen in consultation with a faculty adviser. In addition, students may enroll in the Honors Program, which consists of a methods course (IAS 102) and an honors seminar thesis (LAS H195).

Lower Division
Required Courses: There are two required lower division courses that concentrate their material on Latin America: History 8A (colonial period; offered fall only) or History 8B. LAS 10 (offered fall semester only) is critical since it provides the essential background for upper division coursework. History 8A (colonial period; offered fall only) or History 8B (national period; offered spring only) provide a historical context for further study in the major.

Foreign Language Requirement
Students must attain an intermediate level of competence in a primary language (either Spanish or Portuguese) that can be taken either Spanish for Spanish majors or Portuguese for Portuguese majors. An intermediate level of competence in a primary language is defined as having completed the equivalent of four college-level semesters of instruction in a language other than English. These semesters of coursework can be completed at any institution.

Upper Division
No fewer than 30 units in upper division courses are required, including two Latin American literature/culture courses, two Latin American history courses, and five elective courses.

I. Latin American Literature and Culture (two courses): For students whose primary language is Spanish, one course must focus on the colonial period (pre-1800) and one course on 19th-20th century literature. Both courses must be taught in Spanish. Courses in the 300 or 400 series are listed in the IAS catalog. Modern literature and culture courses are Spanish 340B, 345, or the equivalent. For students whose primary language is Portuguese, two courses must be taken plus one additional Portuguese literature course, such as Portuguese 107, 135, or the equivalent. Both classes must be taught in Portuguese. See the chair or a group adviser for approval of class choices.

II. Latin American History (two courses): Students select from the following: History 100, 103E, 140A, 140B, 141A, 141B, 143, 145, Latin American Studies 150. LAS 150 requires prior approval because topics change each semester; only history-related topics will be approved. See the chair or a group adviser for approval of class choices.

III. Upper Division Elective Courses (Five Courses)
I. Methods (one course). The methodology requirement consists of LAS H195. LAS H195 is a set of analytical skills appropriate to the disciplinary and core focus of their individual program. The methods course can be drawn from any of two broad categories—statistical methods or research design. The selection of the most appropriate course for each student should be undertaken in close consultation with an adviser. The first category focuses on advanced statistical methods and computer-assisted data analysis. A lower division statistics course is strongly recommended as a prerequisite to any of these courses. The second category focuses on research design and field methods. It is oriented to questions of survey design, field analysis, qualitative methods, and approaches to research design. An introductory course in statistics is also recommended as a prerequisite to these courses. Lists of appropriate courses can be obtained from the IAS office.

II. Four Additional Courses. Students choose their remaining four courses from an approved list of courses available from the IAS office. At least 50 percent of each course's content must be devoted to Latin America. As this is an interdisciplinary major, the four courses must represent at least two disciplines other than literature and history. No more than two elective courses may be taken from the same department. Students can choose to focus all four courses around a central theme (e.g., gender and society, religion and society, popular culture, or development) or on a geographical region (e.g., Mexico, Central America, or the Caribbean), although this is not required.

Graduate Program
Master's Degree. The M.A. program in Latin American Studies is a two-year program that provides an opportunity for interdisciplinary work on Latin America at the immediate postbaccalaureate level. Candidates must have a bachelor's degree, a reading knowledge of one of the primary languages, and a high grade-point average. Applicants from the United States must take the Graduate Record Exam (GRE), and international students must take the Test of English as a Foreign Language (TOEFL).

Requirements for the M.A. Degree. Under Plan I, the student completes 24 units of coursework and writes a master's thesis. Under Plan II, the student completes 24 units of coursework and takes a comprehensive oral exam. The courses, in both cases, must be concentrated primarily in two or three disciplines, although mastery of courses may be taken if appropriate to the student's academic objectives. The program must include at least three courses or 12 units at the graduate level. (Credit earned for the undergraduate thesis may not be included.) In addition, students are required to take Latin American Studies 200 and 250 their first semester. The remaining courses' units may be at either the undergraduate (upper division) or graduate level, and must include at least one methodology course appropriate to the student's course of study, and should be selected in consultation with the student's adviser. While a student's program will consist primarily of courses focused explicitly on Latin America, courses with a comparative, theoretical, or methodological focus that contribute to the student's work on Latin America may be considered.

The language requirement for both plans is a high level of proficiency in Spanish or Portuguese and a basic reading and speaking knowledge of the other language.

Doctoral Degree. The Ph.D. program in Latin American Studies is intended for advanced students who have completed an M.A. (or equivalent) in Latin America or in a language of the Americas. Students should have unusually strong academic records and a high degree of intellectual maturity and independence. Students in this program have well-defined interdisciplinary interests that do not fit within the confines of traditional departments. Generally these students do not plan to pursue traditional academic careers. Admission to the program follows the same procedures as are required for the M.A.

Requirements for the Ph.D. Degree. Students must fulfill the GRE/TOEFL requirement, the minimum course and unit requirements described for the M.A. in Latin American Studies, and the language requirements: pass the qualifying examination; and write a dissertation. In addition, the residency requirement, a minimum of four semesters with at least 4 units at the 200 level each semester, must be met. The language requirement is a high level of proficiency in reading, writing, and speaking Spanish or Portuguese and a strong reading and speaking knowledge of the other language. Students admitted to the Ph.D. program must complete at least three courses or 12 units in Latin American Studies within the Ph.D. program.

Concurrent M.A. Degree. The Group in Latin American Studies, in cooperation with the Graduate School of Journalism, offers a concurrent M.J./M.A. in journalism and Latin American Studies. Students apply for the concurrent program through the School of Journalism at the time of admission. Please consult the School of Journalism for additional information.

Lower Division Courses
10. Introduction to Latin American Studies. (4) Three hours of lecture and one hour of discussion per week. This course is intended as a lower division, interdisciplinary core course for students planning to pursue the Latin American Studies major, as well as other interested students. The aim is to provide an introduction to the field that integrates the offerings from the various disciplines. Particular attention will be given to the analysis of the relationship between cultural expression and the politics, economy, and history of the region. (F,S,P)

84. Sophomore Seminar. (1,2) Course may be repeated for credit as topic varies. One hour of seminar per week per unit for 15 weeks. One and one-half hours of seminar per week per unit for 10 weeks. Two hours of seminar per week per unit for eight weeks.
Three hours of seminar per week per unit for five weeks. Sections 1-2 to be graded on a passed/not passed basis. Sections 3-4 to be graded on a letter-grade basis. At the discretion of instructors. Sophomore seminars are small interactive courses offered by faculty members in departments all across the campus. Sophomore seminars offer opportunity for close and intensive intellectual contact between faculty members and students in the crucial second year. The topics vary from department to department and semester to semester. Enrollment limited to 15 sophomores. (F,SP)

Upper Division Courses

130. Cross-Listed Topics. (1-4) Course may be repeated for credit. One to four hours of lecture per week. Prerequisites: Consent of instructor. Consent of instructor. This course is designed to accommodate cross-listed courses offered through other departments, the content of which is applicable to the graduate program in Latin American Studies. Content varies from course to course. (F,SP)

240. Special Topics. (2) Course may be repeated for credit. Three hours of lecture per week for eight weeks. Prerequisites: Consent of instructor. Variable. Prerequisites: Consent of instructor. This course is designed to accommodate cross-listed courses offered through other departments, the content of which is applicable to the graduate program in Latin American Studies. Content varies from course to course. (F,SP)

140. Special Topics. (2) Course may be repeated for credit. Three hours of lecture per week for eight weeks. Prerequisites: Consent of instructor. A short course designed to provide a vehicle to take advantage of short-term visitors coming to campus who have considerable expertise in areas of interest to Latin American Studies. (F,SP)

150. Advanced Studies in Latin American Studies. (4) Course may be repeated for credit. Three hours of lecture per week. Prerequisites: Consent of instructor. Advanced research in current issues or regions of Latin American Studies. The course will focus on specific areas or topics with appropriate comparative material included. Topics change each semester. (F,SP)

192. Senior Thesis. (3,4) Hours to be arranged. Prerequisites: Senior standing. This course is designed to provide undergraduate students who do not participate in the departmental honors program but are interested in writing a major paper on a Latin American Studies topic. The paper should be approximately 30 pages in length. The topic must be agreed upon in advance by both the students and faculty sponsor. Requires weekly consultations with faculty sponsor. (F,SP)

H195. Senior Honors Thesis Seminar. (4) Three hours of seminar per week. Prerequisites: International and Area Studies 102 and consent of instructor; senior standing. The honors program is designed to provide an opportunity for students who do not participate in the departmental honors program but are interested in writing a major paper on a Latin American Studies topic. The paper should be approximately 30 pages in length. The topic must be agreed upon in advance by both the students and faculty sponsor. Requires weekly consultations with faculty sponsor. (F,SP)

298. Directed Graduate Group Study. (1-4) Course may be repeated for credit. Group meetings to be announced. Prerequisites: Consent of instructor and graduate-level standing. Topics vary from semester to semester. (F,SP)

299. Individual Study. (1-4) Course may be repeated for credit. Three hours of lecture per week. Must be taken on a satisfactory/unsatisfactory basis. Prerequisites: Consent of instructor. Directed study and research for graduate students in Latin American Studies. Primarily for graduate students enrolling in a graduate study program to take advantage of short-term visitors coming to campus who have considerable expertise in areas of interest to Latin American Studies graduate students. (F,SP)

500. Selected Topics in Latin American Studies. (4) Course may be repeated for credit with consent of instructor. Three hours of seminar per semester. Seminar will take a multidisciplinary approach to specific geographical areas with appropriate comparative material included. Topics change each semester. (F,SP)

292. Directed Study and Research. (1-4) Course may be repeated for credit. Three hours of lecture per week. Prerequisites: Consent of instructor. Directed study and research for graduate students in Latin American Studies. Primarily for graduate students enrolling in a graduate study program to take advantage of short-term visitors coming to campus who have considerable expertise in areas of interest to Latin American Studies graduate students. (F,SP)

602. Individual Study for Doctoral Students. (1-8) Course may be repeated for credit. Independent. Must be taken on a satisfactory/unsatisfactory basis. Prerequisites: Graduate standing. Individual study in consultation with the major field advisor, intended to provide an opportunity for doctoral students to prepare themselves for the various examinations required for candidates for the Ph.D. May not be used for unit or residence requirements for the doctoral degree. (F,SP)

Law

Law (School of Law, Boalt Hall)

Office of Admissions: 5 Boalt Hall, (510) 642-2274
www.law.berkeley.edu
Dean: Christopher Edley Jr., J.D., M.P.P.
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Vice Chair, Jurisprudence and Social Policy:
Pettersen J. McClean Jr., Ph.D., J.D.
Professors:
Kathryn Abrams (The Herma Hill Kay Distinguished Professor of Law), J.D. Constitutional law, feminist jurisprudence, women's rights, family law, antigovernment, legal method
Catherine Albiston, M.A., J.D., Ph.D. Civil Procedure, professional responsibility, employment discrimination, law and policy in mental health
Alan J. Auerbach (The Robert D. Burch Professor of Law; Director, Robert D. Burch Center for Tax Policy and Public Finance), Ph.D. Law and economics
Kenneth A. Bamberger, J.D. Administrative law, corporations, and professional responsibility
Thomas G. Barnes, D.Phil. Law, political science, law and economics, public choice
Robert G. Berring Jr. (The Walter Perry Johnson Professor of Law), Ph.D. Legal economy, legal history, writing, legal profession, contracts
Eric Biben, J.D. M.S. Conservation biology, ecological and environmental law, land-use planning, and public lands
David D. Carson (The C. William Maxcy Distinguished Professor of Law), M.Sc., J.D., Dipl. Dr. Intern. Environmental law and policy, international organizations, ocean law and policy, public international law, resolution of private international disputes
Jesse H. Choper (The Earl Warren Professor of Public Law), LL.B., J.D. Housing, administrative law, corporate finance, judicial review and the national political process
Robert D. Cooter (The Herman F. Selvin Professor of Law; Director, Program in Law and Economics), M.A., Ph.D. Contracts, law and antitrust, corporate and finance law
Moe Dian-Cohen (The Milo Reyes Robbins Professor of Law), LL.B., LL.M., J.S.D. Criminal law, legal theory
Lauren B. Edelman (The Agris Rodny Rabbi Professor of Law and Professor of Professor of Law and Director, Center for the Study of Law and Society), M.A., J.D. Affirmative action, civil rights, employment law, sociology and law
Aaron S. Edin, J.D., Ph.D. Law and economics, antitrust, industrial organization
Michael Eisenberg (The Koret Professor of Law), LL.B., M.B.A., J.D. Antitrust, contracts, labor process
Daniel A. Farber (The Sho Sato Professor of Law; Director, Environmental Law Program), M.A. J.D. Constitutional law, environmental law, environmental organizations
Malcolm F. Feeley (The Claire Sanders Clements Dean’s Professor of Law; Director, Center for Law and Social Science), M.A., Ph.D. Education, law and policy
Phil R. Frickey (The Richard W. Jennings Professor of Law), J.D., Civil rights, constitutional law, legislation, federal Indian law
Jesse M. Fried, A.M., J.D. Corporate finance, corporations, credit rating, and debt and equity structure
James R. Goidel (The Shannon Cecil Turner Professor of Jurisprudence), M.B.A., J.D. Comparative law, contracts, property, torts, legal theory
Andrew D. Guzman, J.D., Ph.D. Arbitration, commercial law, contracts, international finance, international trade, and economics
Ian F. Haney Lopez, M.A., M.P.A., J.D. Property, critical race theory, race and American constitutional law
Angela P. Harris, M.A., J.D. Civil rights, criminal law, critical race theory
Anne M. Joseph, M.P.H., J.D., Ph.D. Administrative law, legislation, economics and politics of regulation, science and the law
Robert A. Kagan, LL.B., Ph.D. Constitutional law, legal institutions, environment, and public policy, jurisprudence, regulation
Herman Hill Kay (The Elbert Natchie Armstrong Professor of Law), J.D. Conflict of laws, community property, family law, and society
Linda Hamilton Krieger, J.D. Corporate law, discrimination, legal profession, decision making and professional judgment, civil rights, employment law, problem solving, sex discrimination
Eric R. Kutz, J.D., Ph.D. Moral and political philosophy, philosophy of law, law and science
Gillian Lester, L.L.B., L.J.S.M., J.D. Employment law and policy, contracts
David Lieberman (The Jefferson E. Peyster Professor of Law and History), M.A., Ph.D. Religion, law and politics
Goodwin Liu, M.A., J.D. Affirmative action, constitutional law, land use, property, takings clause
Kristin Luker, Ph.D. Abortion, law and medicine, and sexuality, women and the law
Robert MacCoun, M.A., Ph.D. Law and psychology
Laurent Mayral (Director of the Robbins Religious and Civil Law Clinic), J.D., LL.M., D.E.A. Docteur d’Etat en Droit, Habilitation. Comparative law, jurisprudence, legal theory
Peter S. Menell, M.A., J.D., Ph.D. Environmental law and policy, intellectual property, property law, and economics
Robert P. Merges (The William W. Corwin Professor of Law and Rosati Professor of Law and Technology; Director, Berkeley Center for Law & Technology), Ph.D., J.D., M.A., M.P.A., M. Contracts, patent law
Hatch E. Moran (The Robert D. and Leslie-Kay Raven Professor of Law; Executive Committee Member, Center for Social Justice), J.D. Affirmative action, bilingualism, civil rights, law and education
Deidre Mulligan, J.D. First amendment, internet technology, and privacy
Erin Murphy, J.D. Appellate law, criminal law and evidence
Melissa Murray, J.D. Fair housing, social policy
Philippe Nonel, Doctor en Droit, Ph.D. Jurisprudence
Andrew Langan, J.D. Land use, property laws, property tax
Eric P. Pasko (The Edward L. Caleb Professor of Law; Director, Kadoh Center for Morality, Law, and Public Affairs), B. Phil., D.Phil., and duties, biomedical legal and ethical issues, philosophy and law
Daniel Rabinovitch, J.D., Ph.D. International trade law, international transactions law, and policy, international organizations
Pamela Samuels (The Richard M. Sherman Distinguished Professor of Law and Information; Chancellor’s Professor of Law and Information), 2001-06; Director, Berkeley

R prefix=course satisfies R&J requirement
A prefix=course satisfies American Cultures requirement

*Professor of the Graduate School
†Recipient of Distinguished Teaching Award
This course provides an introduction to the main stages of civil litigation in the trial court, including pleading, discovery, summary judgment, right to trial, motions for judgment as a matter of law, joinders of parties and claims, and claim and issue preclusion.

Contracts. The law of contracts, including formation, performance, remedies and termination, is discussed in this course.

Criminal Law. This class is an introduction to criminal law with primary emphasis on the general principles of criminal liability.

Legal Research and Writing/Written and Oral Advocacy. Instruction in legal research and writing is given during the fall semester. Members of the class participate in Written and Oral Advocacy in the spring. For more information, please visit www.law.berkeley.edu/clinics/legalscript.

To learn more about the Moot Court program, please visit www.law.berkeley.edu/studentorgs/mootcourt/index.html.

Property. This course provides an introduction to the topics involved in the law of property, including adverse possession, possessory estates in land, future interests, marital property, landlord-tenant law, concurrent estates, easements and covenants, and land-use planning. Special attention is given to environmental and intellectual property issues.

Torts. This course covers the law of civil injuries.
search books and systems, from the earliest nom- inative reporters to the newest online databases.

Advanced Topics in Jurisprudence. Plato’s Phaedrus is the topic of this course.

Antitrust and Intellectual Property. This ad- vanced course focuses on the special, and often complex, legal issues that are present at the in- tersection of antitrust and intellectual property. The course considers the important role that innovation and intellectual property play in a competitive econ- omy; market definition and innovation markets; intellectual property licensing and antitrust; and mergers and consent decree remedies that involve intellectual property.

Antitrust Law. This course covers the funda- mentals of antitrust and the underpinning legal and economic theory. Topics include horizontal re- strictions (monopolies, cartels, oligopolies and mis- cellaneous cooperative activities among competi- tors); vertical restraints of trade between suppliers and customers (resale price maintenance, territo- rial and customer restrictions, exclusive dealing, re- quirements contracts); and horizontal, vertical and conglomerate mergers.

Antitrust Law and Economics Seminar. The course provides an in-depth examination of the economic principles that underlie modern antitrust law. Topics include market power, mergers and antitrust enforcement; antitrust enforcement; price and non-price competition; antitrust and intellectual property; and the intersection of antitrust and intellectual property. The course examines the legal and economic principles underlying antitrust law and policy, as well as the role of antitrust enforcement in promoting competition.

Appellate Advocacy. This course is designed to improve written and oral advocacy skills at the ap-pellate level. It focuses on working with an appellate record and on the analysis and creative use of legal authorities.

Asian Americans and the Law. In this seminar, students explore how the Asian-American identity is interplayed by and mediated through law and leg- al culture. Students consider the contours of the Asian-American representation in culture generally, and in the legal culture specifically. What effect does this identity have on those who are Asian-American? How does the interaction between legal and cultural factors shape the experience of Asian-American individuals and communities? In addition, students examine legal studies of Asian-American communities, including issues of race and immigration, Asian-American identity and history, and Asian-American representation in the legal profession.

Bankruptcy. This course is a comprehensive survey of bankruptcy law, its processes, policies and politics, with attention to several topics, including bankruptcy courts, voluntary and involuntary bank- ruptcy, fraudulent transfers, rehabilitation, and reorganization under Chapters 11, 12 and 13.

Basic Legal Values. This seminar examines a number of values that have been advanced within the liberal tradition—such as well-being, autonomy and dignity—and considers their potential role in shaping legal doctrine. Students will investigate a range of issues, including the role of autonomy in the context of specific legal doctrines, such as the right to die, the right to marry, and the right to use reproductive technologies.

California Environmental Issues. This seminar includes eight panel discussions by outside speak- ers on key California environmental law and policy issues. One of the sessions will focus on the law of global warming and climate change. The seminar may also include environmental federalism (i.e., the re- spective California and federal laws in environ- mental regulation); the clash between environ- mental regulation and private property rights; the California Environmental Quality Act (CEQA); and coastal resource regulation and preservation in California. The seminar will also examine the challenges faced by the legal community in addressing the capa- city of China to comply with the standards of transparency that membership in the World Trade Organization obligates all members to maintain, and human rights violations by the Chinese party.

Civil Justice Reform Seminar. This course fo- cuses initially on several important proposals for civil justice reform, such as an increase in non- lawyer practice; the alteration of financing arrange- ments, such as the so-called American rule on at- torney fees and contingent fees; stricter pleading requirements; discovery reform; changes in the rules governing expert scientific testimony; changes in jury size and composition; damage caps and puni- tive damage reform; mandatory court-annexed dis- pute resolution and judicial promotion of settlement; increased judicial deference to and promotion of private arbitration and forum selection schemes; and no-fault compensation schemes. The course then examines good or useful reform, investigates whether specific forms seem likely to meet that standard, and considers under what political con- ditions such reforms might be enacted. Students will debate the relative costs and benefits of various agents of reform, including legislators, court rule makers and the U.S. Supreme Court.

Civil Procedure II. This course covers allocation among courts of authority to try cases—including issues of jurisdiction (constitutional and statutory); procedure for the selection of venue, and forum non conveniens—and issues of subject matter jurisdiction, principally federal. Also covered is the doctrine of Erie Railroad v. Tompkins, dealing with the application of state law in federal courts.

Commercial Transactions. This course examines the laws governing the sale of goods and the laws governing the use of personal property as collateral to secure loans and other credit transactions.

Community Law Practice at the East Bay Com- munity Law Center (EBCLC). The East Bay Com- munity Law Center (EBCLC) offers students an opportunity to work in a clinical setting providing free legal services to residents of Oakland and Berkeley. The EBCLC focuses on housing law, family law, consumer law, immigration, and legal services for people with AIDS. Students receive training in the substantive legal areas and, under the supervision of staff attorneys, handle their own client caseload.

Comparative Constitutional Law. This research seminar is for students wishing to write an ex- tended paper on one aspect of constitutional law outside the United States.

Comparative Law. This basic course on com- parative law is an introduction to the method and concept of comparative law and to the study of dif- ferent legal systems, in particular the system of civil law (Europe and Latin America). Topics include the legal profession, the judicial system, civil proce- dure, contracts, and the role of foreign law in the American legal system.

Complex Civil Litigation. This course provides a window into cutting-edge issues and exposure to the practical challenges presented in dealing with these complex cases. The subjects include jury presua- sion, the use of jury consultants, class action is- sues, and the use and misuse of experts.

Computer Law. This course studies the law re- lating to computer software. The primary focus is on the areas of law related to software, con- tracts and licensing, and antitrust law. Internet in- tellectual property issues are also discussed.

Conflict of Laws. This course examines the choice of law, jurisdiction, recognition of judgments, and extraterritorial application of law. Emphasis is
placed on theoretical and practical problems of choice of law.

Constitutional and Civil Rights of Immigrants: Current Issues. This course examines urgent current issues related to immigrants’ constitutional and civil rights, including the constitutional framework governing the rights of noncitizens, the degree of protection afforded by federal civil rights laws, and the impact of the dramatic statutory changes enacted by Congress in 1996.

Constitutional Law and Rational Choice Theory. This course explores the economic analysis and other behavior sciences to constitutional and administrative law, with particular attention to the fiduciary principles and considerations that are relevant to the constitutional and administrative law context.

Critical Race Theory. This seminar examines the ideas behind these aspirations and the way these themes have influenced the legal system. It explores how conceptions of race, sex, national origin, age, sexual orientation, and disability have shaped the contours of educational reform, school vouchers and charter schools, racial isolation in schools, school finance reform, and educational accountability strategies.

Corporate Finance and Bankruptcy Reorganization. This course has two main purposes: (1) to introduce the operation of the major elements of corporate bankruptcy reorganization under Chapter 11 of the Bankruptcy Code; and (2) to show students how bankruptcy (as well as other) law affects the ability of corporate finance transactions outside bankruptcy.

Critical Legal Studies. The course looks at the ideas behind these aspirations and the way these themes have influenced the legal system. It explores how conceptions of race, sex, national origin, age, sexual orientation, and disability have shaped the contours of educational reform, school vouchers and charter schools, racial isolation in schools, school finance reform, and educational accountability strategies.

Corporations I. This course is an introduction to basic legal principles governing the relations among investors, managers, creditors and workers in the business enterprise. The course focuses primarily on the operation of the major elements of corporate law and the role of the bank as a major creditor.

Corporate Finance. This course provides a theoretical foundation for the student’s work. It looks at the ideas behind these aspirations and the way these themes have influenced the legal system. It explores how conceptions of race, sex, national origin, age, sexual orientation, and disability have shaped the contours of educational reform, school vouchers and charter schools, racial isolation in schools, school finance reform, and educational accountability strategies.

Employment Discrimination Law. This course examines the legal issues related to employment discrimination based on race, sex, national origin, age, sexual orientation, and disability.

English Legal History. This course is a topically organized course on English legal history written for law students. It covers major themes in English law and policy in the 21st century need to understand and address. The course explores specific problems in applying law to cyberspace in such areas as intellectual property, privacy, content control and boundaries of jurisdiction.

Entrepreneurial Law. The course looks at the ideas behind these aspirations and the way these themes have influenced the legal system. It explores how conceptions of race, sex, national origin, age, sexual orientation, and disability have shaped the contours of educational reform, school vouchers and charter schools, racial isolation in schools, school finance reform, and educational accountability strategies.

Entertainment Law. This course is a topically organized course on English legal history written for law students. It covers major themes in English law and policy in the 21st century need to understand and address. The course explores specific problems in applying law to cyberspace in such areas as intellectual property, privacy, content control and boundaries of jurisdiction.

Criminal Procedure. This course focuses on basic issues of criminal procedure through case analysis, lecture and discussion of the implications of the Supreme Court’s decisions. Students investigate police practice, including search and seizure, police interrogations, the right to counsel, discovery, sentencing, and capital punishment.

Critical Race Theory. This seminar allows students to explore the central debates in critical race theory on such issues as the intractability of racism; the failure of civil rights; and the relationship between race, gender and law.

Cyberlaw. The emergence of global digital network and digital technology has raised a host of new legal issues that lawyers preparing to practice in the 21st century need to understand and address. The course explores specific problems in applying law to cyberspace in such areas as intellectual property, privacy, content control and boundaries of jurisdiction.

Cyberlaw. The course examines the ideas behind these aspirations and the way these themes have influenced the legal system. It explores how conceptions of race, sex, national origin, age, sexual orientation, and disability have shaped the contours of educational reform, school vouchers and charter schools, racial isolation in schools, school finance reform, and educational accountability strategies.

Criminal Procedure. This course provides an interdisciplinary approach to examine the legal system’s response to domestic violence. Historical and psychological materials are considered, and topics in criminal, family, tort, immigration, welfare, and constitutional law are included.

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Environmental Pollution. This seminar is designed to immerse students in the complexities of litigation involving environmental pollution. Practical issues such as rights to water, air, and the environment are emphasized. The seminar is an introduction to the legal analysis of serious environmental problems.

Estates and Taxation. This course is a basic study of federal estate and gift taxes, and select associated features of the income tax, with some attention to estate and tax planning. Students are required to complete a simulated estate tax return and present a seminar paper on an assigned topic.

Estates and Trusts. This course provides an introduction to intestate succession, the drafting and execution of wills, limitations on the power of bequest, and the use of trusts and other devices to control future interests. It emphasizes California law, though alternative rules are also considered.

Evidence. This course offers a study of the basic problems in evidence law through analysis of the Federal Rules of Evidence, case law and problems. Topics include relevance, trial process, competency and examination of witnesses, hearsay and other rules of exclusion, and lay and expert opinions. Discussion includes allocation of decision-making responsibility among judge, jury and adversaries, and between trial and appellate courts.

Family Advocacy. This course presents the application of evidentiary rules and principles of trial practice through actual courtroom experience. Students work with a variety of hypotheticals and perform and execute direct examination, cross-examination, opening statement and closing argument.

Family Law. This course examines common law, statutory law and federal constitutional principles relating to the formation and dissolution of families. Major topics include regulation of sex and reproductive behavior, adoption, marriage and marital choice, divorce and its consequences, the doctrine of family privacy, the public law of child welfare, illegitimacy and child neglect.

Federal Courts. This course covers the constitutional and statutory role of courts in the federal system, focusing on the jurisdiction of the federal courts, their relation to the state courts, and the roles of federal and state law.

Federal Criminal Law. Students gain familiarity with the rules and remedies that give rise to the risk of complex criminal prosecutions in the federal system, including mail and wire fraud, RICO and federal narcotics, and tax offenses. Federal sentencing and pretrial sentencing litigation are also explored, and federal criminal law practice is examined from the defense as well as prosecutorial perspective.

Federal Indian Law. This course concerns the legal relationships among American Indian tribes, the United States, and individual states. Topics covered include the history of American Indian law; conflicting tribal, state and federal jurisdiction over persons and property on Indian lands; tribal sovereignty and self-determination; and natural resources on Indian lands.

Feminist Legal Theory. This course examines feminist jurisprudence through a particular lens—conflicts among feminists and other legal actors about the extent to which women should be described as victims, autonomous agents or some more complex combination.

Field Placement Program. Field placements include work in public interest, nonprofit or government agencies under the supervision of experienced attorneys (Practitioner-Supervised Clinical), and judicial externships in state or federal court judges (Judicial Extern Seminar).

Foundations of Legal Philosophy. This graduate-level seminar is an introduction to contemporary work in legal philosophy. The first (and major) part of the course addresses the questions of general jurisprudence: what is law, a legal system, law’s relation to morality, and the nature of legal authority? The second part focuses on “Anglo-American” analytical literature, it also surveys postmodern and critical perspectives. The latter part of the course covers some philosophical problems within specific areas, such as the conflicts between democracy and constitutionalism, the justification of punishment in criminal law (particularly in relation to inchoate and collective crimes), the justification of tort and contract liability, and/or the merits of economic analysis of private law.

Foundations of Political Philosophy. This seminar is intended to acquaint students with some of the main currents in contemporary Anglo-American political philosophy. Topics may include: theories of justice; the federal/taxation, utility and rights; and the nature of equality.

Health Law. This course studies legal issues relating to medical practice, health insurance, and the rights and responsibilities of healthcare providers and patients. Topics include doctor and hospital liability, informed consent, medical malpractice, regulations governing health insurance and financial subsidies, public subsidies for healthcare, laws relating to death and dying, and selected issues of biomedic ethics.

Immigration Policy. This course reviews the development of immigration policy with a special emphasis on developments post-1980 to the present. Substantive areas of focus will be changes in family and employment-based programs including regulatory and administrative issues. Significant attention will be given to the political, economic, and social context surrounding important policy debates, including a close examination of the policy-making process, both legislatively and administratively.

Income Tax I. This course uses statutory, judicial and administrative materials as an introduction to the rules and principles of federal income taxation, particularly as applicable to individuals. It provides a working understanding of tax concepts and statutory provisions, as well as an appreciation of the economic and social implications of the law and its potential use to implement defined policy objectives.

Income Tax II. This course covers the federal income taxation of organizations and business enterprises—corporations, partnerships, limited liability companies, etc. Emphasis is placed on understanding the internal revenue code and regulations, with special attention given to policy, planning and theory.

Insurance Law. This course examines principles of insurance policy interpretation and the law of property insurance; liability insurance and the insurance claim settlement; and ERISA.

IP in the Entertainment Industries. This course explores the role of intellectual property in the music, film, and television industries. Each industry will be discussed from a variety of perspectives, detailing the business, legal, social, and ethical issues encountered by practitioners. Lecture sessions will be combined with guest speakers from several sectors of the entertainment business. Topics will also include agents, managers, the studio system, and new technologies. Emphasis will be placed on the ways in which digital technology is reshaping and augmenting the traditional entertainment industries.

Intellectual Property Strategies for E-Commerce. Intellectual property (IP) is at the core of the intellectual property right in the modern economy. Topics include the law of ownership of rights; assignment of rights, especially in the employment context; licensing transactions; security interests in intellectual property and other finance-related issues; and bankruptcy considerations.

International and Foreign Legal Research. This course covers research methods and sources for international, foreign and comparative legal research, utilizing both print and electronic materials. Students will learn basic research skills, research strategies, evaluation of materials in various formats, search techniques for effective use of electronic sources (including Lexis, Westlaw, and the Web), and research organization. Topics include international private and public international law, foreign law, private international law, the European Union, the United Nations, other international organizations, and more. At the end of the semester, students will have practical knowledge and experience in selecting and using a variety of international and foreign legal sources.

International Business Transactions. This course surveys the development and operation of international trade, financial institutions, human rights and the environment; and the effects of international trade practices, failure to afford intellectual property protection, international trade in art treasures, international bankruptcies, foreign investment and international tax planning for individuals.

International Civil Litigation. This course provides an introduction to the civil procedure issues that arise in American courts when international matters are involved. It examines how international parties, events and laws may (or may not) alter the manner in which American federal courts handle initial civil procedures and motions such as the separation of powers, federalism and American notions of due process and trial litigation may affect the resolution of international disputes. Topics unique to international litigation, such as the Act of State doctrine, the Foreign Sovereign Immunities Act and international conflicts of law, are also covered.

International Development Law and Policy. This course explores legal issues, institutions and strategies pertaining to international development, examining efforts to strengthen foreign legal systems through such devices as improved judicial administration, alternative dispute resolution and legal aid. Emphasis is placed on substantive legal issues pertaining to human rights, the status of women, the environment and economic reform. The seminar focuses substantially, though not exclusively, on Asia.

International Environmental Law. This seminar examines the role of law in the management of the international environment. Consideration is given to international environmental treaties; the role of the international Court of Justice in identifying and establishing international law; international regulation of private conduct that affects the environment; and the effects of international trade, financial institutions, human rights and armed conflict on the environment.

International Human Rights. This seminar introduces students to the legal and institutional mechanisms for the international protection of human rights, emphasizing international treaty and non-treaty mechanisms for protecting and promoting human rights, international and regional systems and the role of governmental organizations. The use of international rights standards in the United States is also addressed.
This course introduces students to Japan’s legal system and to some of the social science and legal literature showing how that system works. Among the topics examined are the degree of litigiousness; informal systems for adjudicating disputes; the Japanese constitution; public interest litigation; the judicial system; the bar; and the courts as they relate to international trade, business relations, administrative regulation, contractual relations, and criminal justice.

Judicial Extern Seminar. This seminar addresses various aspects of the judicial process and focuses on such subjects as: how they are selected, what their responsibilities are, how the courts are organized and managed, what role externs/clerks play in the system, and how and whether justice is being dispensed. The issue of who has access to courts will be of particular importance. One goal of the course is to provide an understanding of how the system operates, the challenges it faces, and where and how it needs change. The course will provide a background for externs working in the courts.

Jurisprudence. This course views the law from a philosophical perspective. Topics include the relation between law and morality; legal reasoning; the justification of sanctions and rights; authority; the concepts of law and society; the ethics and politics of law; adjudication and legislation; and positive law and nihilism.

Juvenile Justice. This course examines the major jurisdictional categories and the legal doctrines of the juvenile court and contrasts them with the treatment of young offenders in juvenile and criminal courts. Emphasis is on the court’s evolution over time and prospects for further reform of its juvenile delinquency jurisdiction.

Labor Law. This course considers the fundamental legal principles affecting labor relations in the private sector, which are incorporated in the National Labor Relations Act and related legislation. Several topics will be reviewed, including union organizing and elections, collective bargaining, strikes, boycotts, arbitration and individual employee rights within unions.

Land-Use Planning and Control. This course examines traditional land-use controls. Areas covered include zoning and private covenants; environmental programs arising from the environmental decade of the 1970s, such as comprehensive plans, environmental impact assessment, citizen action, and countervailing duty laws, and the legal structure established by the World Trade Organization (WTO). The WTO dispute settlement process, tariffs, quotas, nontariff trade barriers, most-favored nation status and national treatment clauses, and free trade areas are studied.

Interviewing and Depositions. This course covers techniques used in interviewing a client as well as taking a deposition. Skills addressed include: identifying the preliminary problem, presenting a chronological overview, preparing a case analysis and concluding the interview, preparing the facts for the deposition, gathering information (discovery), gaining admissions, handling documents, defending a witness, preparing and examining expert witnesses, dealing with obstreperous counsel and problem witnesses, and using depositions at trial.

Introduction to Intellectual Property. This course is intended for students interested in a general overview of intellectual property and as a gateway to Boalt’s Law and Technology Program. The course begins with an analysis of the competing policies underlying intellectual property laws. Topics include the basics of trade secrets; patent, copyright and trademark law; and licensing, ownership and antitrust issues; in addition to the infringement of rights and remedies for legal protection. Areas of particular contemporary interest—the protection of computer programs and biotechnology—are considered in depth.

Introduction to Law and Economics. Economic analysis provides one of the major theoretical perspectives for understanding American economic activities. In this course, students learn to construct and critique economic models of the incentive effects of different legal rules and institutions.

Japanese Law and Society. This course introduces students to Japan’s legal system and to some of the social science and legal literature showing how that system works. Among the topics examined are the degree of litigiousness; informal systems for adjudicating disputes; the Japanese constitution; public interest litigation; the judicial system; the bar; and the courts as they relate to international trade, business relations, administrative regulation, contractual relations, and criminal justice.

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Legal Profession. This course considers a range of legal and ethical rules—including doctrines of zeal and competence, loyalty and confidentiality—across a variety of practices. One category of law from the outside, examining the definition of the law and the source of its authority; the distinction between natural law and positivism; and the relationship between law and the source of its authority. The other category adopts an internal perspective, focusing primarily on the theoretical and philosophical underpinnings of substantive legal issues and identifying the salient ideas and values that shape legal discourse and inform legal policy.

Legislation. This course examines the legislative process, the relationship between the common law and statutes, and statutory interpretation. It focuses on the theoretical and practical aspects of statutory interpretation, including overall theories of interpretation, the canons of statutory interpretation and the use of legislative history.

Life and Death: Moral Reasoning and the Law. This seminar explores several issues involving life and death, including abortion, the theory of the right to self-defense, and active and passive euthanasia. It also considers how the community, defined, is changing, how it determines who gets in and out. It also explores discussions of relevant Federal Circuit and Supreme Court decisions, but also through student argument on behalf of the hypothetical plaintiff and the defendant.

McBaine Moot Court Competition. The James Patterson McBaine Honors Competition is Boalt Hall’s venerable moot court competition and is open to all second- and third-year students. Cases chosen for the competition involve cutting-edge issues of great public importance. The competition does not have a regular classroom component. Typically, the Moot Court Board arranges one or two non-mandatory lunchtime meetings to discuss the cases. Monday afternoon arguments and Tuesday evenings will submit their briefs in late February or early March, and will participate in the preliminary round of oral arguments in early or mid-March. Students will advance to the quarter-finals, semi-finals and final based on their performance on the brief and in the preliminary rounds of oral arguments, with briefs counting for at least half of the available points in the preliminary round and judges have the past included Justices of the United States Supreme Court and the California Supreme Court, and distinguished members of the United States Court of Appeal. Prizes are awarded for the best briefs and best oral argument.

Meditation. This practice-oriented course introduces the basic principles and methods of mediation in civil disputes. It covers the aims of mediation and the variety of approaches to it; preparation for mediation, including assessment of a mediation session; mediation ethics, including problems of neutrality and confidentiality; and techniques for resolving bargaining impasses.

Mental Health Law. This course explores the interrelationships between law and mental disabili- ties. Because mental illness is an emerging area of practice, it covers treatment, habilitation, privacy and the protection of civil liberties for people with mental disabilities. The course looks at how law and social science must be harmonized to serve the needs of the mentally disabled person and society.

Mergers and Acquisitions in the High-Technology World. This class focuses on mergers and acquisitions through the lens of the high-technology industry. The high-flying world produces mergers that differ from standard merger transactions because, in general, the product is intellectual property, an intangible asset. This class will explore how to structure and finance different types of deals found in Silicon Valley-type deals and highlights ways to add value to those deals.

Negotiations. Primarily through simulation exercises and role playing, this course covers alternative approaches to negotiation and the requisite skills associated with negotiation. Students will analyze and debate mock problems based on a prepared set of facts. Among the topics addressed are preparation, including case evaluation and client counseling; tactics; communication skills; psychological barriers to conflict resolution; competitive versus cooperative styles and techniques; and ethical issues.

Ocean Law and Policy. This course examines ocean law from a historical perspective and provides a survey and analysis of contemporary ocean-related international relations and U.S. constitutional law and public policy.

Patent Litigation. This course is a hands-on introduction to patent litigation. The class is taught around a hypothetical case, in which doctrinal elements of patent law—such as validity and damages—are explored, not through discussions of relevant Federal Circuit and Supreme Court decisions, but also through student argument on behalf of the hypothetical plaintiff and the defendant.

Pensions and Employee Benefits. This course is designed for students interested in employment and labor law and business planning. The course follows a model client through the start-up, growth and merger phases of a business, and looks at the employee benefits from both the client’s perspective and the labor union perspective. Students employ basic tax and labor law concepts to advise the client and the union on the design, implementation and operation of health and retirement plans for the client’s employees.

Playing by the Rules: Video Game Law. California is at the heart of the video game industry in the United States, which is now larger than the film and record industry. This seminar examines the legal regulation of the video game industry in sequence from the development to the distribution of game assets. Doctrines will be discussed as applicable from the client’s perspective, including the issues of clients, customers, and competitors. An underly- ing concern is to assess the role of the law, especially the intellectual property regime, in fostering and/or inhibiting creativity and innovation within a particular industry. The seminar is based on discussion using a range of materials and exercises, including discussing case-law, law review and popular press articles, reviewing a range of industry contracts, advising industry experts, conducting infringement analyses, and participating in a negotiation exercise between a developer and publisher.

Pretrial Civil Litigation. This course is designed to acquaint students with the complex practice in typical civil commercial cases. It covers pleadings; written discovery; preparing for, taking and defending depositions; making and opposing motions; mediation, settlement, oral argument of motions. Statute, setting, settlement and other factors that can affect the resolution of the case and the particular claims and defenses that will be presented to the court are discussed.

Pretrial Criminal Litigation. This course examines the fundamental structure of the criminal court system, from arrest to disposition. It is an emerging area of focus on the creative preparation of the criminal case for trial, including how to evaluate a criminal case and how to file pretrial motions that will maximize the likelihood of a fair disposition for the defendant. The course explores real-life aspects of criminal representation, including traditional and nontraditional courtroom techniques, and also includes thoughtful discussion of the criminal justice system and the inherent abuses that predominate.

Prosecution of War Crimes. This is a semester-long seminar on the prosecution of war crimes. Over the last decade, there has been an explosion of war crimes prose- cutors dealing with crimes that happened in the former Yugoslavia, Rwanda, Sierra Leone, Sri Lanka, Cambodia, and Iraq. American prosecu- tors will continue to be involved in many of these tribunals. This course will focus on the legal and practical issues that arise when prosecuting these complex and challenging cases.

Public Land Law. The subject matter of this course is federal public land used primarily as a commodity, and for preservation of nature and recreation. Taught as a discussion group to a small number of students, this class includes readings on the purposes and uses of public lands, as well as materials dealing with related statutes and court decisions.

Race and American Law. This survey course provides an introduction to the dialectics of race and law in the United States. Topics include the emergence and collapse of a slave regime, relations between white slave owners and African Americans, and the role of race in definitions of nationhood as evidenced by immigration and naturalization laws.

Real Estate Transactions I. This course involves the legal, practical and commercial aspects of land transfer and carries the introductory real property course to its next step: conveyancing and commercial real estate practices. It considers, in the land transfer context, matters such as agency, land contracts, options, commercial leases, escrows, execution and delivery, deeds and other title-documents, recording, title insurance, and secured real estate financing.

Real Estate Transactions II. This is a course on security transactions in land. It covers real property security devices and the problems connected with real estate security. Topics include redemption, subrogation, priority, subordination, foreclosure, antifiduciary provisions, multiple security and mixed collateral loans, the transfer of debtors’ or creditors’ interest, state and federal regulation, and allocation of loss.

Refugee Law. This course examines the root causes of refugee flight and the existing interna- tional norms that address human rights abuses and civil strife. Using both an international and a do- mestic perspective, students explore the re- sponsibility of nations to accept refugees. The course includes an in-depth examination of refugee law doctrine in the United States, with particular focus on the assessment of individual claims for asyl- um status.

Regulating Public Integrity. This course explores the issues surrounding laws that regulate public in- tegrity, examining conflict of interest, lobbying, campaign finance regulations, and the disciplinary regimes that govern federal, state and local elected and appointed officials.

Remedies. Remedies is a practice-oriented ex- ploration of the substantive and strategic issues asso- ciated with the remedies available to litigants in a variety of settings. The class explores provisional and permanent injunctive relief, declaratory relief, reformation, restitution, unjust enrichment, specific performance, the various measures of damages, attorneys’ fees, and associated procedural issues and defenses.

Representing Low-Wage Workers. This seminar reviews various labor laws that affect low-wage workers. The course will focus upon areas of the law such as (1) wage and hour, (2) immigration laws affecting documented and undocumented
workers, (3) workplace leave, (4) disability, (5) workers’ compensation, (6) family rights in the workplace, (7) unemployment benefits, (8) OSHA employer duties, (9) privacy and dignity, and (10) statutory limits on termination. The course will utilize some outside speakers who specialize in these areas of the law.

**Resolution of Private International Disputes.** This course explores the prominent issues faced in resolving private international disputes. Through the course, a contract dispute and a tort claim are considered in the context of international arbitration and transnational litigation. Post-proceeding issues, such as execution of arbitral awards, appeal, and the recognition and enforcement of foreign judgments and arbitral awards, are also examined.

**Roman Law Seminar.** This seminar is an introduction to Roman law. Students will study the legal texts collected in the compilations of Justinian, especially in the Institutes. Particular attention will be given to the construction and development of the Roman legal system from the times of the XII tables to the later imperial constitutions, including the role of the lawgivers in making second laws. Students will also examine the distinction between private law and public law, the definition of natural law, ius gentium and civil law, the classification of contracts, the concept of ownership of goods as well as issues of intellectual property, torts, and family law (marriage, paternal power and the legal status of children). Texts will be based on English translations of the Corpus Iuris Civilis.

**Samuelson Law, Technology and Public Policy Clinic.** Students in the Technology and Public Policy Clinic help shape public policy by developing new legislation, influencing technical standards, engaging in litigation and educating the public. Since the clinic’s founding, students have served as advocates on a variety of cutting-edge legal issues, including freedom of speech on the Internet, privacy standards for online and wireless communications, the protection of intellectual property, and family law (marriage, paternal power and the legal status of children). Texts will be based on English translations of the Corpus Iuris Civilis.

**Secured Transactions: Article 9.** This course focuses on one of the most basic tools in business transactions: the secured loan. This course examines the mechanics of making secured loans, the rules that govern repossession of collateral if the debtor does not pay, and the priority rules that determine the fate of various parties who claim rights to the same collateral.

**Securities and Class Action Litigation.** In this class, students study key trends in the securities field, both before and after the Private Securities Reform Act of 1995. The course reviews a number of recent mega-fraud cases, such as Enron, WorldCom and Madoff. Ethical issues facing practitioners in the field are also discussed.

**Securities Regulation I.** This course concentrates on the regulation of the distribution of securities and corporate finance transactions under the Securities Act of 1933 and state Blue Sky laws. Topics include the registration process under the 1933 act, exemptions from registration, practice before the Securities and Exchange Commission, and the underwriting of private and public distributions of securities.

**Securities Regulation II.** This course concentrates on the regulation of securities trading on stock exchanges and in the over-the-counter market. The course covers the regulation of tender offers and anti-takeover provisions (including advising the board of directors), disclosure requirements in securities transactions, brokerdealer regulation, insider trading under federal laws, and civil liabilities under federal and state securities acts.

**Sex-Based Discrimination.** The course examines the validity of discrimination based on sex in U.S. law, in light of their history, underlying policies and social context. The following areas are covered: constitutional law, family law, employment law (primarily Title VII, the Equal Pay Act and related measures), education law (including Title IX) and criminal law.

**Sexual Harassment.** This course examines the substantive law applicable to sexual harassment cases in various settings, with an emphasis on places of employment, but also including schools, housing and public places. Evidentiary and other practical problems in litigating sexual harassment cases are considered, and current developments in the law and their underlying legal theories are analyzed.

**Sexual Orientation and the Law.** This course explores the relationship between the law and sexual orientation, gender and nonconformity. It examines various legal principles that might be used to limit the ability of specific groups or “identities” to disadvantage people because of their sexual orientation. The course looks at issues such as equal protection and due process/privacy, and explores how courts have used these doctrines in consideration of lesbians, gay men, bisexuals and transgender individuals in critical aspects of their lives (employment, housing, family relationships, etc.), form that debate takes. In addition the workshop surveys various concrete tools for increasing corporate social responsibility through mechanisms both internal (market-based regulation) and more externally oriented voluntary regulations (such as international treaties and other transnational regulation). Students also learn how comparative law and current U.N. initiatives bear on corporate accountability.

**Social Justice Writing Seminar: The Role of the Lawyer in Public Policy.** This seminar addresses the implications of various concrete tools for increasing social responsibility through mechanisms both internal (market-based regulation) and more externally oriented voluntary regulations (such as international treaties and other transnational regulation). Students also learn how comparative law and current U.N. initiatives bear on corporate accountability.

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**Techniques of Financial Analysis for Lawyers.** This basic course in trial practice focuses on trial advocacy skills, including factual and legal preparation for trial, trial objection, direct examination, cross-examination, introduction of demonstrative and real evidence, practical and legal preparation for trial, trial objection, direct examination, cross-examination, introduction of demonstrative and real evidence, and trial motioning. The course covers the historical development of related laws and the major issues currently being debated in several key areas of telecommunications regulation.

**Trade Secrets.** This course explores the theoretical and practical aspects of protecting information as a trade secret. It examines the basic legal doctrines and social issues that define this field and addresses the processes of trade secret litigation.

**Trademarks.** This course covers various theories of trademark/trade name infringement and dilution, including defenses such as transmutation. Topics include mechanisms of global trademark protection (such as international treaties and protection strategies); trademark issues in cyberspace; rights of publicity; trade dress; false advertising; and trademark licensing.

**Trial Practice: Civil.** This course is designed for students who are interested in trying criminal cases. The emphasis is on courtroom practice, although some written work is required. Areas covered include client interviews, initial stage of the criminal process, objections to evidence, preliminary hearings and pretrial motion hearing.

**U.S. Supreme Court Seminar.** This seminar provides in-depth study of nine cases (mostly constitutional law) that will be decided during the present term of the U.S. Supreme Court. Each student is assigned the role of learning the basic constitutional views of a current justice of the Supreme Court for the purpose of advancing that justice’s position on each of the cases, and writing one majority opinion of substantial magnitude and one concurring or dissenting opinion.
tion of voting, empirical analyses of American voting patterns, and historical and doctrinal accounts of the suffrage struggles of African Americans and women. It examines the regulations of apportionment under the 14th Amendment, and the regulation of minority vote dilution under the Voting Rights Act. In addition it explores a contemporary legal controversy relating to voting.

Workshop in Law, Philosophy, and Political Theory. This course provides an opportunity for students to engage with the work of leading scholars in moral, legal and political theory. It should be of particular interest to students contemplating an academic career in the law. Each week a second- or third-year student offers a manuscript of work in progress for evaluation. Students write short papers assessing the weekly manuscripts for weekly discussion sessions. Students who wish to enroll are asked to complete a short application form at the first class.

Workshop on Environmental Policy. The work shop is an opportunity for students to work directly with and counsel government and nongovernmental organizations (NGOs) on issues involving environmental law and policy. Working in small groups, students choose from a variety of assignments involving environmental and land-use law, work directly with in-house counsel to shape the scope and development of assignments, and subsequently offer a manuscript of work in progress for evaluation. Students also meet intermittently to discuss issues of general concern, such as ethical considerations, satisfying client expectations, and reconciling personal values and the client’s goals.

Student-Initiated Courses and Projects

Subject to credit limitations in the Academic Rules and the appropriate approvals, second- or third-year students may also earn credit for student-initiated educational projects as follows:

The Group Research Projects Program enables groups of students to study or research special legal topics of common interest, primarily in subject matter areas not covered by the regular curriculum. A faculty supervisor and the approval of the dean are required.

The Independent Research, Writing and Study Projects Program enables individual self-instruction, study or research in subject areas of interest, often with the goal of producing an original paper or report. A faculty supervisor and approval of the dean are required. Credit is also available to second- and third-year students for editorial work on journals, as well as for work as tutorial or writing associates, Academic Support Program tutors, and First-Year Writing Program student instructors.

Legal Studies

(School of Law, Boalt Hall)

Program Overview

The legal studies major is under the academic supervision of the School of Law faculty.

Program Coordinator: Charles McClain Jr., Ph.D., J.S.D.

The Major

The legal studies major provides undergraduate students with an opportunity to become familiar with legal ideas, legal institutions, and the legal process. It is designed to provide tools for reasoned appraisal of how the law works and of the policies that underlie it. The major is based firmly on the view that the study of law and justice has a rich humanistic tradition and that its pursuit can encourage sustained reflection on fundamental values.

Legal studies courses are taught by members of the Law School faculty, including humanities scholars and social scientists in the graduate program in Jurisprudence and Social Policy. The courses build on the contributions of philosophy, history, sociology, political science, economics, psychology, political philosophy, and legal scholarship. It should be noted that legal studies is a liberal arts major in the College of Letters and Science. The major was not established for the purpose of training students for law school. It is designed for undergraduate students who are interested in law as a field of critical inquiry, irrespective of their ultimate career objectives.

Lower Division Requirements. One term of coursework is required in each of the following areas: introductory statistics, introductory economics, introductory philosophy, and European history. Students may declare the major after completing coursework from two of the four areas. These courses must be taken for a letter grade; the cumulative grades must be 2.0 or better. A list of courses offered at Berkeley which satisfy these prerequisites is available at the Legal Studies Program office and on the Legal Studies web site.

Upper Division Requirements. A minimum of 32 upper division units for completion of the major. All of these units must be taken for a letter grade. Students must complete one course from each of the following four groups of courses: A: Legal and Social Theory; B: Historical/Comparative; C: Principles and Problems of Substantive Law; D: Administration of Justice. The remaining units may be completed either with courses from within the department, or with up to three courses from an approved list of law-related courses offered by other departments.

The rationale for the structure of the legal studies curriculum becomes apparent if a few words are said about each of the course groupings referred to above. The Group A requirement insures that all students have familiarity with some of the important aspects of moral, political and legal philosophy. Group B courses are meant to limit parochialism and to insure that students have the capacity to draw on the insights of legal traditions other than their own. The courses from Group C are meant to acquaint students with selected forms of legal ordering—e.g., the substantive law of crimes, property, negligence—and to assure an understanding of social policies and historical contexts. The Group D requirement assures that students in the major have familiarity with some of the important aspects of legal procedure or, more broadly, legal process in society. These courses use relevant insights from the social sciences, e.g., organizational theory, to illuminate the dynamics of law-making, adjudication, and implementation.

Honors Program. With consent of the major advisor, a student majoring in legal studies with an overall GPA of 3.3 and a GPA of 3.5 in legal studies courses may be admitted to the Honors Program. The honors student is required to enroll in 100A, 100B, and 100C for a total of at least two semesters (at the instructor’s option) and to prepare an honors thesis.

Further information on the major in legal studies may be obtained from the program office and the web site.

Only some of the following courses are offered in any given year. Consult the online Schedule of Classes for up-to-date information on course offerings.

Lower Division Courses

19AC. Moral Politics and Legal Culture. (3) Two hours of lecture and one hour of discussion per week. This lower division course focuses on the use of the law to resolve major social and policy conflicts. It explores the question whether a legal system can address these disputes or introduce elements of a common vision and common values into conflicts, affecting the participants on all sides. The class will collaborate on research projects and legal issues of actual harm, liability of groups and other collectivities, and virtues and limits of the rule of law. (F,SP)

39. Freshman/Sophomore Seminar. Course may be repeated for credit as topic varies. Seminar format. Priority given to first-year and sophomores. Freshman and sophomore seminars offer lower division students the opportunity to explore an intellectual topic with a faculty member and a group of peers in a small-seminar setting. These seminars are offered in all campus departments; topics vary from department to department and from semester to semester.

84. Sophomore Seminar. Course may be repeated for credit as topic varies. One hour of seminar per week per unit for 15 weeks. Two hours of seminar per week per unit for 10 weeks. Three hours of seminar per week per unit for five weeks. Sections 1-2 to be graded on a passed/not passed basis. Sections 3-4 to be graded on a letter-grade basis. Prerequisites: At discretion of instructor. Sophomore seminars are small interactive courses offered by faculty members in departments across the campus. Sophomore seminars offer opportunities for close, regular intellectual contact between faculty members and students in the crucial second year. The topics vary from department to department and semester to semester. Enrollment limited to 15 sophomores. (F,SP)

98. Directed Group Study. Course may be repeated for credit. Enrollment is restricted; see the Introduction to Courses and Curricula section of this catalog. One to four hours of directed group study per week. Must be taken on a passed/not passed basis. Small group instruction in topics not covered by regularly scheduled courses. Topics may vary from year to year. (F,SP)

Upper Division Courses

100A. Foundations of Law: The Quest for Justice. (4) Three hours of lecture and one hour of discussion per week. Introduction to law for the liberal arts student. The purpose of the course is to familiarize students with major legal ideas, legal reasoning, and legal processes; to provide a comparative and historical perspective on law; and to highlight basic philosophical problems in the quest for justice.

100B. Foundations of Law: The Quest for Justice. (4) Three hours of lecture and one hour of discussion per week. Must be taken on a passed/not passed basis. This course introduces students to the major legal ideas of moral, political and legal theorists from ancient and modern times. These ideas are then re-examined in the context of more modern legal thinkers. The course develops the concepts introduced in 100A. The set of topics and the philosophical works studied change from year to year.

103. Theories of Law and Society. (4) Three hours of lecture and one hour of discussion per week. An introduction to the study of legal, moral and social development, with special emphasis on the social thought of the 18th and 19th centuries and including the writings of Marx, Maine, Durkheim, Weber, and other contemporary figures.

105. Theoretical Foundations of Criminal Law. (3) Two hours of lecture and one hour of discussion per week. Prerequisites: Sophomore standing. Criminal law raises fundamental theoretical issues that have occupied philosophers over the years. This course will discuss the development of jurists’ ideas about the significance of actual harm, liability of groups and other collectivities, and virtues and limits of the rule of law. (F,SP)

107. Theories of Justice. (4) Three hours of lecture and one hour of discussion per week. Major perspectives in social and economic thought, e.g., natural law, legal studies, etc.
natural right, laissez faire, "possessive individualism," contractualism, pluralism, and social equality as they affect contemporary discussion of "higher law," fairness, civic competence, and distributive justice.

109. Aims and Limits of the Criminal Law. (4) Three hours of lecture and one hour of discussion per week. Analysis of the capacity of criminal law to fulfill its aims. What are the aims of criminal law? How are they assigned relative priority? What principles can be identified as forming the effort to control disapproved activities through criminal law? (F,SP)

111. The Making of Modern Constitutionalism. (4) Three hours of lecture and one hour of discussion per week. Historical examination of the emergence of "constitutionalism" as an authoritative approach to the study of law and politics from the 16th to 18th centuries, concluding in discussion of the debate over ratification of the U.S. Constitution. (F,SP)

114. Law in the Work of Art. (4) Three hours of lecture and one hour of discussion per week. The study of selected works of art, including poetry, music, and architecture, as a basis for guided study into the tradition of philosophical speculation regarding the relation of beauty—the way art manifests itself—to goodness—the ultimate end of law.

116. Legal Discourse 1500-1700. (4) Three hours of lecture and one hour of discussion per week. This course focuses on the evolution of legal thought and discourse from the late medieval period to the Enlightenment. Topics to be considered include the relationship between legal thought and intellectual development, the nature of different legal systems, and constitutional developments and legal discourse. Although the emphasis is on England, there will be some consideration of differences between English and continental European legal thought.

117. Representation of Law in American Fiction. (4) Three hours of lecture and one hour of discussion per week. A comparison of the aesthetic and modern understanding of punishment prevailing in Anglo-American thought and in former cultures such as Medieval Europe, Ancient Israel, and Ancient Greece. The relationship between punishment and deterrence, vengeance, purgation, excels; volition; determinism, fate; collective responsibility. Most of the readings are in literary works such as the Greek Bible. (F,SP) Sassoubre

120. Philosophies of Punishment: Ancient to Modern. (4) Three hours of lecture and one hour of discussion per week. An examination of the evolution of ideas about the nature of punishment and to what extent common and civil law systems are different. We will also ask to what extent all these legal systems are confronting the same problems, and if so, why they often arrive at different answers. (F,SP) Gordoey

145. Law and Economics II. (4) Three hours of lecture and one hour of discussion per week. Law and Economics is not a prerequisite for Law and Economics II. Students may take either or both courses. The purpose of this course will be to analyze the provision of goods and services. Economists and lawyers have developed a critique of these mechanisms which has prompted substantial reforms in recent years, e.g., deregulation in transportation. The course examines these critiques.

151. Law, Self, and Society. (3) Two hours of lecture and one hour of discussion per week. Contemporary moral and political philosophy has been increasingly interested in how conceptions of the self relate to various aspects of our social and political life. These include the nature of individuals and collectivities, while also actively participates in forming the identities of persons and in structuring conflicts between families, corporations, and municipalities. This course will explore some theoretical approaches to this reciprocal relationship between law and the different social actors that it governs.

155. Government and the Family. (4) Three hours of lecture and one hour of discussion per week. How has the law constructed and deconstructed "family" relationships? What are the common law, statutory, and constitutional principles that affect the formation, regulation, and dissolution of families? How do these principles change over time? This course examines the intersection of law and marriage, family, and child welfare policies? (F,SP) Hollinger

157. International Relations and International Law. (4) Three hours of lecture and one hour of discussion per week. How has the law constructed and deconstructed "family" relationships? What are the common law, statutory, and constitutional principles that affect the formation, regulation, and dissolution of families? How do these principles change over time? This course examines the intersection of law and marriage, family, and child welfare policies? (F,SP) Hollinger

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what kind of state conduct is likely to be influenced by international law. (F,SP) Guzman

160. Punishment, Culture, and Society. (4) Three hours of lecture and one hour of discussion per week. Criminal punishment in the United States. (1) Forms, functions, and consequences of punishment. (2) The impact of cultural changes, colonial period to the present. (2) Speculation about the meaning and direction of current trends. (F,SP)

161. Law in Chinese Society. (4) Three hours of lecture and one hour of discussion per week. The course examines conceptual forms that constitute the basis of the Chinese legal system, traditional theories and institutions of pre-1911 society, and the expression and rejection of the traditional concepts in the laws of the Nationalist period and the People’s Republic.

162. Courts and Social Policy. (4) Three hours of lecture and one hour of discussion per week. The course examines controversies over the capacity of the courts. These issues will be examined by tracing changes in the business of courts and exploring the emergence of these issues in their social context.

163. Juvenile Delinquency and Juvenile Justice. (4) Three hours of lecture and one hour of discussion per week. This course examines the premises, doctrine, and operational behavior of juvenile courts, particularly in relation to the commission of seriously anti-social acts by adolescents. Topics covered include theories of delinquency; the jurisprudence of delinquency; the incidence and severity of delinquency; police response to juvenile offenders; the procedures of juvenile courts and youth corrections; and reforms or alternatives to the juvenile court system.

C165. Drug, Tobacco, and Alcohol Policy. (3) Three hours of lecture per week. Prerequisites: Public Policy 101 or a course in introductory microeconomics. Despite many pharmaceutical, behavioral, and economic policies regarding tobacco, alcohol, marijuana, cocaine, and heroin have evolved independently. Critics of the war on drugs call for legalization, while some critics of "big tobacco" have called for its prohibition. The purpose of this course will be to evaluate these debates from a policy analytic perspective, drawing on theory and research from the behavioral sciences, epidemiology, and economics. Also listed as Public Policy C162. (F,SP) MacCoun

166. Sex, Reproduction and the Law. (4) Three hours of lecture and one hour of discussion per week. This course examines recent American legal and social history with respect to reproductive and sexual behavior. We will consider two theoretical aspects of the subject: theories of reproductive behavior and second, more general theories about how reproduction is socially regulated. Armed with these theoretical perspectives, the course will then examine legal policies concerning reproduction, including sterilization, abortion, and contraception. (F,SP)

170. Crime and Criminal Justice. (4) Three hours of lecture and one hour of discussion per week. Introduction to the etiology of crime and criminal justice administration. What is crime? What are the main features and problems of the processes by which suspects, criminals are apprehended, tried, sentenced, punished? Past and current trends and policy issues will be discussed. (F,SP)

176. Twentieth Century American Legal and Constitutional History. (4) Three hours of lecture and one hour of discussion per week. Prerequisites: Junior or senior standing. It is recommended that students have completed at least one course in legal studies or political science that deals with American history or American government prior to enrollment. Overview of American law and the constitutional system in the 20th century. Topics include Progressive Era Regulatory policy, criminal justice and relations, freedom of speech and press, New Deal legal innovations, modern tort liability, environmental regulation, judicial reform, and federalism. (F,SP)

177. Survey of American Legal and Constitutional History. (4) Three hours of lecture and one hour of discussion per week. Overview of American legal and
This course will provide advanced reading and in-depth discussion on law, history of the common law, business regulations, law history of the legal profession, and the modern constitutional order. (F,SP)

178. Seminar on American Legal and Constitutional History. (3) Two hours of seminar per week. Prerequisites: Consent of instructor. Enrollments are limited. This course will provide advanced reading and independent research in the history of American law. Pre-requisites: Minimum sophomore standing. (F,SP)

179. Comparative Constitutional Law. (4) Three hours of lecture and one hour of discussion per week. An examination of constitutional decision-making in a number of countries based on selected high court opinions.

181. Psychology and the Law. (4) Three hours of lecture and one hour of discussion per week. Prerequisites: Minimum sophomore standing. This course will examine the implications of cognitive, social, and clinical psychology for legal theory, policies, and practices. The course will analyze the psychological aspects of intent, responsibility, deterrence, retribution, and morality. We will consider psychological theories regarding law (e.g., witness testimony, psychiatric diagnosis, and prediction), procedure (e.g., trial conduct, jury selection), and topics in criminal tort and family law. (F,SP) McCleary

182. Law, Politics, and Society. (4) Three hours of lecture and one-and-one-half hours of discussion per week. This course examines the theory and practice of legal institutions in performing several major functions of law: allocating authority, defining relationships, resolving conflicts, and fostering social solidarity. In doing so, it will assess the nature and limits of law as well as consider alternative perspectives on social control and social change. (F,SP)

183. Sociology of Law. (4) Three hours of lecture and one and one-half hours of discussion per week. Prerequisites: Sociology 1, 3, 3A, or consent of instructor. Selected legal rules, principles, and institutions treated from a sociological perspective. Influence of culture and social organization on law; role of law in social change; social aspects of the administration of justice; social knowledge and the law. (F,SP)

184. Sociology of Law (C). (4) Three hours of lecture and one and one-half hours of discussion per week. Prerequisites: Sociology 1, 3, 3A or 3C or consent of instructor. Selected legal rules, principles, and institutions treated from a sociological perspective. Influence of culture and social organization on law; role of law in social change; social aspects of the administration of justice; social knowledge and the law. Also listed as Sociology C114. Edelman

186. Gender, Law, and Society. (4) Three hours of lecture and one hour of discussion per week. Prerequisites: Minimum sophomore standing. This course examines how law affects women's lives in legal and social contexts, and how assumptions about women and gender in the legal system help to socially construct the meaning of gender. An interdisciplinary approach is taken. The course includes an examination of the legal doctrine, feminist legal theory, and empirical research; theoretical perspectives considered will address the intersection of gender with other dimensions of inequality, such as race, class, and sexual orientation. (F,SP) Abelson

187. Discrimination, Law, and Inequality. (4) Three hours of lecture and one hour of discussion per week. Prerequisites: Minimum sophomore standing. Examination of late 20th-century efforts to develop and deploy new legal theories and strategies to address problems of income, class, age, national origin, sex, gender, nonconformity, and disability. Potential and limits of law in transforming discriminatory social norms and institutionalized practices, and effectuating intergroup equality in employment, criminal justice administration, education, and other social contexts will be considered from a variety of disciplinary perspectives. (F,SP) Kreiger

188. Gender, Race, Class, and the Law. (4) Three hours of lecture and one hour of discussion per week. This course is intended to introduce students to key writing in three legal scholarship, feminist legal studies, critical race theory, and Latina/o critical legal theory (LatCrit). The course situates this scholarship in historical and socio-legal context, alongside such movements as sociological jurisprudence and critical legal studies, as well as more recent developments in legal theory. The course focuses on classic books and articles within this body of scholarship, as well as key legal cases. (F,SP) Sanchez

189. Feminist Jurisprudence. (4) Three hours of lecture and one hour of discussion per week. Prerequisites: Minimum sophomore standing. This course will explore the ways in which feminist theory has shaped conceptions of the law, as well as examine a range of feminist legal scholarship, including inequality, difference, dominance, intersectional, poststructural, postcolonial theories. It will ask how these theories have shaped legal interventions in areas including workplace/educational access, sexualized coercion, workplace conflict, “cultural” defenses, and globalization of sweatshop labor. (F,SP) Abrams

190. Seminar on Topics in Law and Society. (1-4) Course may be repeated for credit. One to four hours of seminar per week. Prerequisites: Consent of instructor. Advanced seminar on a specific topic with specific topics to be announced. (F,SP)

H195A-H195B. Honors in Legal Studies. (4;4) Honors in Legal Studies. (4;4) Hours to be arranged. Students may take H195A or In-Progress. Prerequisites: Senior standing, acceptance into Honors Program in Legal Studies. Study of an area of law under the supervision of a faculty member leading to the preparation of a senior honors thesis. One or two semesters at the instructor's option. (F,SP)

198. Directed Group Study. (1-4) Course may be repeated for credit. One to four hours of group study per week. Prerequisites: Consent of instructor. Directed group study leading to the preparation of a thesis under the supervision of a faculty member leading to the preparation of a senior honors thesis. One or two semesters at the instructor's option. (F,SP)

Letters and Science (College of Letters and Science)

Office: 113 Campbell Hall, (510) 642-1483 ls.berkeley.edu

Executive Dean: Letters and Science: Mark A. Richards, Ph.D.

Divisional Deans:

W. Geoffrey Owen, Ph.D. (Biological Sciences)

Janet Broughton, Ph.D. (Humanities)

Mark A. Richards, Ph.D. (Physical Sciences)

Interim, Jon G. Stavitski (Social Sciences)

Interim, Christina Maslach, Ph.D. (Undergraduate Division)

Associate Deans of the Undergraduate Division:

Steven K. Bottorff, Ph.D.

Robert G. Jacobsen, Ph.D.

The College of Letters and Science offers undergraduate students a variety of programs leading to the Bachelor of Arts degree in four academic years of full-time study. The first two years are a time of exploration and experimentation, leading to declaration of a major. In the last two years students acquire and refine special knowledge as they focus on their major programs. The college's departments are devoted to instruction and research in a variety of academic subjects. Each department represents a sound statement and refined development of a set of structured ideas. The subjects of the departments overlap and complement one another.

Requirements for Admission in Advanced Standing

Students applying for admission will not be consid- ered if they have completed more than 80 semester units (120 quarter units) in the College of Letters and Science. The dean of the college makes exceptions to this policy only in unusual circumstances. Applicants with advanced-placement credit may, however, exceed the 80-unit limit by the amount of advanced-placement credit and be admissible if they meet all other admission criteria.

Transfer students with 60 or more semester units are expected to have satisfied, before admission to the college, the reading and composition breadth and language core curriculum requirements at any general campus of the University of California.

Note: In recent years, certain major programs have turned away qualified applicants because of space limitations. Transfer applicants should be aware that admission to those majors in the college is competitive.

Biological Sciences Majors. Students planning to declare majors in a biological science must in ad- dition have completed the minimum subject prepa- ration and additional breadth requirements by completing the Intergeneral Education Transfer Curriculum (IGETC). This program specifies a series of subject areas and types of courses which, if completed before transfer, will satisfy the lower division breadth and general ed- ucation requirements at any general campus of the University of California.

Students who have completed 60 to 70 semester units may request transfer admission. The following program requirements are devoted to instruction and research in a variety of academic subjects. Each department represents a sound statement and refined development of a set of structured ideas. The subjects of the departments overlap and complement one another.

Requirements for the Bachelor of Arts Degree

Students must complete a minimum of 120 semes- ter units, distributed according to regulations which appear in the College of Letters and Science's Guide to Earning Your Degree. A 15-unit class schedule per semester is considered to be a nor- mal course load; a class list of fewer than 13 units requires the special permission of the Dean. There are also scholarship, minimum-progress, resi- dence, breadth, and major requirements; these are discussed in the announcement as well. Brief de- scriptions of the breadth, major, and minor re-quirements appear below. Major and minor pro- grams are outlined under the department, field, or...
group headings in this publication. In addition, students must satisfy the University requirements in Subject A, American History, and American institutions, at the Berkeley campus American Culture.

Breadth Requirements. There are four breadth requirements:

1. Reading and Composition. Students must normally complete the first half of the requirement (an "A" course) during the freshman year and the second half of the requirement (a "B" course) during the sophomore year. Students must complete the requirement through coursework according to the requirements of the semester system, whether the coursework is undertaken at Berkeley or elsewhere.

2. Quantitative Reasoning. This requirement may be fulfilled by satisfactory performance in an examination or by successful completion of an acceptable college course. Information about acceptable examinations and acceptable courses is included in the announcement. This requirement, if satisfied by coursework, must be completed without delay.

3. Foreign Language. Students who have not satisfied the language requirement at the time of admission must complete it without delay. The requirement may be fulfilled by: (a) completion of a third year of one foreign language in high school with a minimum grade of C-, (b) by completion of the second semester of a Berkeley course, or its equivalent, in a foreign language with a minimum grade of C- or (c) by demonstration of equivalent knowledge through examination, including the College Entrance Examination Board Achievement Test, the CEEB Advanced Placement Examination (if taken before admission to the college), or an acceptable foreign language placement examination offered by a foreign language department at Berkeley or on another campus of the University of California.

4. Seven-Course Breadth Requirement. Students must take one course from each of the following categories, with no more than two courses in the same department:
   - one course in physical science;
   - one course in biological science;
   - one course in arts and literature;
   - one course in historical studies;
   - one course in philosophy and values;
   - one course in international studies or participation in the University of California Education Abroad Program or a recognized equivalent; and
   - one course in social and behavioral sciences.

These courses may be taken from the College of Letters and Science and the professional schools and colleges and may be spread over the four years of college attendance. See the College of Letters and Science’s Guide to Earning Your Degree for details and a list of the approved courses that you may take to fulfill the requirement.

Major Programs. All students must pursue and complete a major program, the object of which is to provide them with a limited experience in specialization. There are more than 60 departmental major programs ranging from the humanities (e.g., art, comparative literature, English, foreign languages, etc.) and the social sciences (e.g., anthropology, economics, geography, psychology, etc.), to the biological sciences (e.g., integrative biology, molecular and cell biology) and the physical sciences (e.g., geology, mathematics, statistics, etc.). In addition, there are interdisciplinary programs in American studies, Chicano studies, Celtic studies, cognitive science, development studies, Dutch studies, environmental sciences, ethnic studies, film, Latin American studies, legal studies, mass communications, Middle Eastern studies, peace and conflict studies, political economy of industrial societies, religious studies, and social welfare. There are also field majors in the physical sciences and interdisciplinary studies. Moreover, students who have completed at least 60 semester units and at least one semester of enrollment at Berkeley, and who have attained a minimum 3.0 Berkeley and overall grade-point average may, with the permission of the dean and support and supervision of a college faculty member and a faculty member who acts as second reader of the individual major thesis, pursue an individual major designed to satisfy special academic goals. Thus, the options available to students outside traditional disciplines are many and varied.

Minor Programs. Minor programs are intended as optional programs that will encourage coherence in the work that students undertake outside their major field(s) of study. Students may complete one or more minor programs, normally in a field both academically and intrinsically related to their major. The College has set the following minimum requirements for completion of a minor program:
   - Course requirements: A minimum of five upper division courses, completed on a letter-graded basis, are required for the minor. At least three of the five upper division courses must be completed at Berkeley.
   - Grade-point average requirements: Students must maintain a minimum overall grade-point average of 2.0 in upper division courses required for the minor program.

Students should consult the department or group in charge of the minor for additional requirements and specific information regarding the minor program in which they are interested. Admission to the minor and certification of completion of the minor are determined by the department or group in charge of the program. When a student completes a minor program, the department or group in charge will notify the Office of the Registrar, so that the completion may be noted on the student's transcript.

Additional minor programs are offered by other schools and colleges on campus. Consult their listings in this catalog for more information.

Undergraduate Division

The mission of the Undergraduate Division is to develop and administer innovative and interdisciplinary courses and programs in the College of Letters and Science that do not belong to a single department.

Undergraduate and Interdisciplinary Studies (UGIS) administers the field major in interdisciplinary studies, the individual major, and the group majors in American studies, cognitive science, disability studies, environmental sciences, mass communications, and religious studies. Minor programs are offered in creative writing and religious studis. UGIS also supports the following majors in international and area studies (101 Stephens Hall, (510) 642-4466): Asian studies, development studies, European studies, Latin American Studies, Middle Eastern studies, peace and conflict studies, and political economy of industrial societies (PEIS).

In addition to our interdisciplinary majors, the Undergraduate Division sponsors a wide range of academic programs and services for undergraduates. A first-class research university such as ours offers something special to undergraduates who know how to make the most of it, and the Undergraduate Division is a good starting place for students who seek close intellectual contact with faculty, or who are in a small seminar or in a research apprenticeship, for students who would like to apply for a national scholarship, etc. Some of the campus programs for undergraduates that are administered by the Undergraduate Division are described below.

The College Writing Programs (112 Wheeler Hall, (510) 642-5570), designed to help undergraduates establish fluency and control over their reading and writing skills, are also part of the Undergraduate Division.

The Freshman and Sophomore Seminars are also housed in the Undergraduate Division. Seminars are created and taught by faculty members from nearly every campus department. The office posts descriptions of these special course offerings to freshmen in time for Tele-BEARS registration each semester. For more information, please contact Alix Schwartz in 333 Campbell Hall, (510) 642-8378, or go to fss.berkeley.edu.

The UC Berkeley Washington Program, also administered by UGIS, allows undergraduates to spend a semester in Washington, D.C., combining coursework with internships.

The Office of Undergraduate Research (OUR) seeks to involve undergraduates more deeply in the research life of the University. To this end, OUR coordinates and develops programs and resources that bring undergraduates into the field, laboratories, and archives. This office administers the Undergraduate Research Apprenticeship Program, the Haas Scholars Program, and the Beckman Scholars Program, and maintains a central research opportunities web site: research.berkeley.edu.

The Scholarship Connection coordinates applications for scholarship and awards based on academic achievement and social or political contribution. Campus committees for the Rhodes, Marshall, Truman, and several other distinguished scholarships are housed here. Staff work to identify talented undergraduates and assist them in the application process.

Organizational Units

African American Studies
American Studies
Ancient History and Mediterranean Archaeology
Anthropology
Art
Practice of Art
History of Art
Asian American Studies
Astronomy
Biostatistics
Buddhist Studies
Celtic Studies
Chemistry
Chicano Studies
Classics
Cognitive Science
College Writing Programs
Comparative Literature
Computer Science
Demography
Development Studies
Dutch Studies
Earth and Planetary Science
East Asian Languages and Cultures
East European Studies
Economics
Law and Economics
English
Environmental Sciences
Ethnic Studies
Ethnic Studies Graduate Group
Film
Folklore
French
Gender and Women's Studies
Geography
German
History
Integrative Biology
Interdisciplinary Studies
Italian Studies
Latin American Studies
Legal Studies
Music
Logic and the Methodology of Science
Mass Communications
Mathematics

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Medieval Studies  
Middle Eastern Studies  
Molecular and Cell Biology  
Music  
Native American Studies  
Near Eastern Studies  
Peace and Conflict Studies  
Philosophy  
Physics  
Psychology  
Political Economy of Industrial Societies  
Political Science  
Population Studies  
Psychology  
Religious Studies  
Rhetoric  
Scandinavian  
Science and Mathematics Education  
Slavic Languages and Literatures  
Social Welfare  
Sociology  
South and Southeast Asian Studies  
Spanish and Portuguese  
Statistics  
Theater, Dance, and Performance Studies  
Theater and Performance Studies  
Dance and Performance Studies  
Undergraduate and Interdisciplinary Studies  

Lower Division Courses

1. Exploring the Liberal Arts. (2) One and one-half hours of lecture and one hour of discussion per week. Must be taken on a passed/not passed basis. This is a course for entering students, particularly those who are undecided about the major they would like to pursue. It provides an introduction to the intellectual landscape of the College of Letters and Science, revealing the underlying assumptions, goals, and structure of a liberal arts education. Topics include the difference between the College of Letters and Science and the professional schools, the rationale behind the breadth requirement, the approaches and methodologies of each of the divisions in the college, and the benefits of engaging in research as an undergraduate. The ultimate goal of the course is to transform the students into informed participants in their own educational experiences, so that they can make the most of their years at Berkeley.

(F,SP) Staff

17. Literature and Culture of the Nordic World. (4) Students will receive 2 units of credit for 17 after taking Scandinavian 75. Three hours of lecture and one hour of discussion per week. Course Desires are designed to embody the mission of the College of Letters and Science and the professional schools, the rationale behind the breadth requirement, the approaches and methodologies of each of the divisions in the college, and the benefits of engaging in research as an undergraduate. The ultimate goal of the course is to transform the students into informed participants in their own educational experiences, so that they can make the most of their years at Berkeley.

(F,SP) Sanders

20. Arts and Literature. Three to four hours of lecture and one hour of discussion per week. This course features significant engagement with arts, literature or language courses. It is a critical study of works of art or through the creation of art. Art enables us to see the familiar world with new, often questionning eyes, and make connections, images, characters, and issues come alive in our imagination, which is essential to almost all intellectual endeavor. The Arts and Literature breadth requirement is intended to provide students with knowledge and appreciation of the creative arts in all their forms. In Augustine’s words, art is an exercise of the imagination in accordance with the beauty, a wielder of creativity, a lodestar for critical perspectives, and a touchstone of aesthetic quality— in sum, a continuing source of learning for the general liberal education.

(F,SP) Staff

C30T. Drugs and the Brain. (3) Students will receive no credit for C30T after taking Molecular and Cell Biology 62 or C62, Letters and Science 19, or Psychology 119. Three hours of lecture and one hour of discussion per week. The historical, chemical nature, botanical origin, and effects on the human brain and behavior of drugs such as stimulants, depressants, psychedelics, analgesics, antianxiety, antidepressants, and other psychoactive substances of both natural and synthetic origin. The necessary biological, chemical, and psychological background material for understanding the content of this course will be contained within the course itself. Also listed as Molecular and Cell Biology C62. (F,Presti)

C30U. Americans and the Global Forest. (4) Students will receive no credit for C30U after taking Environmental Science, Policy, and Management 11. Three hours of lecture and one hour of discussion per week. This course challenges students to think about how individual and American consumer decisions affect forest ecosystems around the world. A survey course covering the consequences of different ways of thinking about the forest as a global ecosystem and as a source of goods like trees, water, wildlife, food, jobs, and services. The scientific tools and concepts that have guided management of the forest for the last 100 years, and the laws, rules, and informal institutions that have shaped use of the forests, are analyzed. Also listed as Environ Sci, Policy, and Management C11. (F,SP) Staff

C30V. Environmental Issues. (4) Students will receive no credit for C30V after taking Environmental Science, Policy, and Management 10. Three hours of lecture and one and one-half hours of discussion per week. Relationship between human society and the natural environment: case studies of ecosystem maintenance and disruption. Issues of economic development, population, energy, resources, technology, and alternative systems. Also listed as Environ Sci, Policy, and Management C10. (F,SP) Staff

40. Historical Studies. Three to four hours of lecture and one hour of discussion per week. Each lower-division course in this series deals primarily with the human events, institutions and activities of the past. Historical Studies are particularly important because, to paraphrase Alexandre de Santa Anna, those who fail to learn the lessons of history are doomed to repeat its mistakes. The study of history provides us with perspective on the human condition and with an appreciation of the revolution of the numerous cultures and social orders that have populated the earth. Whether students study history to understand how our world evolved from the past or focus on the distinctions between the present and previous eras, they will develop a better understanding of and appreciation for human experience.

(F,SP)

40AC. California and the World. (4) This course centers on California and its particular relationship to global forces and events. From its inclusion in a global perspective to the ripple effects of the Gold Rush, and from the enormous impact of World War II to the complex repercussions of the high tech boom, California holds a unique place in the process of globalization. Taking this perspective, the course will explore specific aspects of this state’s historical development, taking into consideration the importance of the state’s development of skill in writing. Satisfies either half of the Reading and Composition requirement. (F)

C70U. Introduction to General Astronomy. (4) This course introduces students to the fundamental principles of the nature of the universe. What are planets made of? What can we learn about the nature of reality and the universe itself? The scientific tools and concepts that have guided management of the forest for the last 100 years, and the laws, rules, and informal institutions that have shaped use of the forests, are analyzed. Also listed as Astronomy C12 and Earth and Planetary Science C12.

(F,SP)

C70V. Physics and Music. (2) Two hours of lecture and one hour of discussion per week. What makes the Earth hospitable for life? Is the Earth the only planet with liquid water? How do earthquakes, superconductors, and quantum physics help us understand the workings of our solar system? What are planets made of? Why do they orbit the sun the way they do? How do planets form, and what are they made of? Why do some bizarre moons have oceans, volcanoes, and ice f lows? What makes the Earth unique among the stars of the universe? What are the implications of finding a new Earth-like planet? What are the fundamental principles of the universe? How do we use them to understand the universe and the cosmos? This course introduces students to the fundamental principles of the physics of sound production in musical instruments, musical scales. Numerous illustrative lecture demonstrations will be given. Only the basics of high school algebra

*Professor of the Graduate School  
†Recipient of Distinguished Teaching Award
C70X. Big History—Cosmos, Earth, and Humanity. (4) Three hours of lecture and one hour of discussion per week. Must be taken on a pass/no pass basis with consent of Sophomore standing except for freshmen who have previously taken 50. This course explores all four major regimes of history—cosmic history, Earth history, life history, and human history. Bringing together knowledge from the natural sciences, it seeks to understand the character of history by examining long-term trends and critical chance events, by looking for common causes underlying historical change in all four regimes, and by identifying the novelties that have made each regime unique. It offers a broad perspective for students interested in any one of the historical disciplines, helping them cross the boundaries between them.

Upper Division Courses

120. Arts and Literature Three to four hours of lecture and one hour of discussion per week. This upper division course features significant engagement with arts, literature or language, either through critical study of works of art or through creation of art. Enables us to see the familiar world with new, often questioning eyes, to experience the creative and the aesthetic, and to examine eyes, and makes distant times and places, characters, and issues come alive in our imagination, which is essential to almost all intellectual endeavor. The Arts and Literature course requirement is intended to provide students with knowledge and appreciation of the creative arts so that, for the duration of their lives, engagement with art can be, variably, a welspring of creativity, a lodestar for critical perspectives, and a touchstone of aesthetic quality—in sum, a continuing source of learning and serious pleasure.

140. Historical Studies Three to four hours of lecture and one hour of discussion per week. Each upper-division course in this series deals primarily with the human events, institutions and activities of the past. Historically, the early important question to paraphrase the philosopher George Santayana, those who fail to learn the lessons of history are doomed to repeat its mistakes. The study of history provides us with perspective on the human condition and with an appreciation of the origins and evolution of the numerous cultures and social orders that have populated the earth. Whether students study history to understand how our world evolved from the past or to focus on the distinctions between the present and previous eras, they will come away with a richer understanding of and appreciation for human experience.

170AC. Crossroads of Earth Resources and Society. (4) Three hours of lecture and one hour of discussion per week, plus two-day field trip. Intersection of geological processes with American Cultures in the past, present, and future. Overview of ethnogeology including traditional knowledge of sources and uses of earth materials and their cultural influences today. Scientific approach to study of tectonic controls on the history of global distribution of energy fuels, metals, and industrial minerals. Evolution and diversity of opinion in attitudes about resource development, environmental management, and conservation on public, private, and tribal lands. Impending crisis in renewable energy and the imperative of resource literacy. Also listed as Earth and Planetary Science 170AC. This course satisfies the American Cultures requirement.

180. Social and Behavioral Sciences. Three to four hours of lecture and one hour of discussion per week. Upper-division courses in this Social and Behavioral Sciences series provide students with the tools they need to analyze the determinants of human behavior and the dynamics of social interaction among human beings. While fulfilling this breadth requirement, students may find that they look upon the world with a fresh perspective: every encounter or gathering provides an opportunity to observe society in action. Students of the College of Letters and Science will also find that the ability to analyze the complex political, economic, social, cultural, and psychological factors at play in contemporary life will equip them to evaluate the evidence muster in support of key public policy decisions.

Linguistics

Linguistics (College of Letters and Science)

Department Office: 1203 Dwihalle Hall #2650, Berkeley, CA 94720

www.linguistics.berkeley.edu

Chair: Sharon Inkelas, Ph.D.

Professors

Larry L. Hinton, Ph.D. University of California at San Diego. American Indian languages, sociolinguistics, language loss and language revival.

Larry M. Hyman, Ph.D. University of California at Los Angeles. Phonological theory, African languages, especially Niger-Congo.

Sharon Inkelas, Ph.D. Stanford University. Phonology, morphology, Turkish

Keith Johnson, Ph.D. Ohio State University. Processes of speech perception as they relate to phonetic and phonological theory, descriptive research on American Indian languages.

George P. Lakof, Ph.D. Indiana University. Cognitive linguistics, especially the neural theory of language conceptual systems, conceptual metaphor, syntax-semantics-pragmatics; also the application of cognitive linguistics to politics, literature, philosophy, and mathematics.

Robin T. Lakoff, Ph.D. Harvard University. Semantics, Indo-European linguistics, historical linguistics, language change, general linguistics, grammarization, gesture.

Eve E. Sweetser, Ph.D. University of Berkeley. Semantics, syntax, historical linguistics, Celtic languages, speech act theory, metaphor theory, semantic change, general linguistics, gesture.


Ian Maddessen (Emeritus). Ph.D. University of California, Los Angeles. Phonetic and phonological universals, historical and historical phonetic research in Austronesian, Southeast Asian, and Sino-Tibetan languages.

James M. Mattof (Emeritus) University of California, Berkeley. Southeast Asian languages, especially Tibetan, Burmese, Thai, Chinese, Japanese, field linguistics.

Yiddish studies, historical linguistics, psycholinguistics, language typology, areal linguistics.

John J. Ghafl (Emeritus). Ph.D. University of California at Los Angeles. Experimental phonology and phonetics, historical phonology, ethnolinguistic aspects of communication, speech technology.


Karl E. Zimmer (Emeritus). Ph.D. Columbia University. Turkish, word formation, history of linguistics.

Assistant Professors

Andrew Garrett, Ph.D. Harvard University. Indo-European linguistics, historical linguistics, language change, Northern Nakh-Daghestani Indian languages.

Gary B. Holland, Ph.D. University of California, Berkeley. Indo-European linguistics, historical linguistics, history of linguistics, language typology.

Sara M. McChesney, Ph.D. University of London. Syntax, African linguistic structures, Swahili.

Richard Rhodes, Ph.D. University of Michigan. American Indian languages, grammatical theory, phonology and lexicology.

Assistant Professors

Alice Gaby, Ph.D. University of Melbourne and Max Plank Institute for Psycholinguistics. Australian Languages, Austronesian, syntax.

Line Mikkelsen, Ph.D. University of California, Santa Cruz. Syntax, semantics, morphology, Danish philosophy of language.

Lynn Nichols, Ph.D. Harvard University. Syntactic theory, semantics, Burmese, Southwestern Pueblo languages.

Affiliated Professors

William F. Hanks, Ph.D. (Anthropology) Johanns Nichols, Ph.D. (Slavic Languages and Literatures)

Dan I. Sobin, Ph.D. (Psychology) Alan Timberlake, Ph.D. (Slavic Languages and Literatures)

The Major

The undergraduate major in linguistics introduces students to the traditions and techniques of research into the structure, functions, and histories of languages. Since the study of language draws from and contributes to many other fields of study, students choosing the linguistics major are strongly urged to achieve a more than superficial acquaintance with some related but independent field: cognitive science, anthropological, or related courses in philosophy, rhetoric, English literature, or the literature of a foreign language.

Prerequisites: Linguistics 100 with a minimum grade of C.

Requirements: Upper Division. The major consists of a four-course core (Linguistics 110, 115,
120, and 130) which includes phonetics and phonology, syntax and semantics, morphology, and language history and comparison.

Three or four other courses totaling a minimum of 10 additional upper division units are added to the core to total 70 units. Students and major advisers to complete the major’s minimum degree requirements. Of these units, five must be selected from upper division and graduate-level offerings in Linguistics. The remaining five upper division units may be courses from outside the department, but must be strongly related to linguistics. A list of pre-approved courses can be found on the Department of Linguistics web site and require the prior written consent of an undergraduate adviser to be counted in fulfillment of your Linguistics Department requirements.

Because the major varies greatly from student to student, each student is encouraged to plan a program of study with an undergraduate adviser and to see the adviser on a regular basis (at least once a semester).

Honors Program. With the approval of the major adviser, a student with a grade-point average of 3.5 or higher, both overall and in the major, may apply for admission to the honors program. The program consists of 2-4 units of Linguistics H195 units per semester for at least two semesters. Under the direction of a faculty member, students carry out an approved program of independent study in which they attain a reasonable mastery of an appropriate linguistic topic. As evidence of each semester’s work, students must submit an acceptable thesis summarizing the material they have covered and are invited to give a brief synopsis of their research at the undergraduate honors colloquium held in early May each year.

The Minor

Many students find it useful to take several courses in linguistics during their undergraduate careers to complement their major work. A minor in linguistics gives students official recognition for having completed a linguistics sub specialization.

Prerequisites. Linguistics 100 with minimum grade of C.

Requirements: Upper Division. Any two of the following courses: Linguistics 110, 115, 120, 130. Two additional elective linguistics courses, one of which must be from the Linguistics Department.

Graduate Programs

The Department of Linguistics has strengths in many areas: phonetics, phonology, morphology, syntax, semantics, pragmatics, sociolinguistics, historical linguistics, and cognitive linguistics are all well represented by the faculty’s interests. The department emphasizes research that seeks to discover and provide explanations for general properties of linguistic form, meaning, and usage. The department is involved in those in the service of endangered languages, and it supports a number of language revitalization programs for Native Americans.

Preparation for Graduate Study in Linguistics. Graduate work in linguistics should have had an undergraduate major in linguistics, or some equivalent acceptable to the department. They should be prepared to pass the required foreign language reading examinations early in their graduate career.

Master’s Degree in Linguistics. Students may follow either Plan I or Plan II for the master’s degree. Plan I requires 25 units plus a thesis. (No course units are granted for the thesis itself.) Plan II requires 30 units. Both plans include at their culmination, normally at the end of the second year, a two-hour comprehensive oral examination. Required courses for the linguistics M.A. are 110, 200, 211A, 220A, 230, one course from the set [105, 123, 181, 250A, 250B, 250C, 250D, 250E]; one course from the set [210, 211B, 215], and one course from the set [55AC, 105AC, 106AC]. Students are encouraged to supplement the core courses with a coherent battery of courses in a particular language or language family, in general linguistics, or in some allied field such as cognitive science, or anthropology. These supplemental courses are to be chosen in consultation with the student’s adviser.

Doctoral Degree in Linguistics. The doctoral program requires an M.A. in linguistics from Berkeley, and follows the requirements described in the doctoral section below. For information on the further requirements, go to the department web site at www.linguistics.berkeley.edu.

Linguistic Society of America Summer Institute. In the U.S. the principal scholarly organization representing the field of linguistics is the Linguistic Society of America (1325 18th Street N.W., Suite 211, Washington, D.C. 20036-6501, telephone (202) 835-1714, www.lsasoc.org). The organization sponsors a six- or eight-week program in linguistics every other summer, in collaboration with some sponsoring university. Both graduate- and undergraduate-level students are strongly encouraged to take part in these programs and to participate in a wide range of courses, seminars, conferences, workshops, and lecture series, covering developments in the field and areas of interest which no single university can offer.

Lower Division Courses

1A-1B. Elementary Swahili. (4) Four hours of recitation and one hour of laboratory per week. (F) M/Chico

2A-2B. Elementary Language Tutorial. (3.3) Course may be repeated for credit. Hours to be arranged. Prerequisites: Requires special permission. Offered to Center for African Studies. Specially designed tutorials for individuals in small groups needing instruction in African languages not normally offered on the Berkeley campus. (F)

5. Language and Linguistics. (4) Three hours of lecture and one hour of discussion per week. An introduction to the scientific study of language. (F,SP)

6. Linguistics Writing Workshop. (2) Two hours of workshop and 2 hours of private meetings with composition faculty members that meet in small groups across the campus. Sophomore seminars are small interactive courses of 10-12 students taught by faculty members from across the campus. Sophomore seminars offer opportunity for close, regular intellectual contact between faculty members and students in the crucial second year. The topics are decided by department and semester to semester. Enrollment limited to 15 sophomores.

55AC. The American Languages. (4) Three hours of lecture and one hour of discussion per week. A linguistic view of the history, society, and culture of the United States. The variety of languages spoken in our country, the issues of language shift, loss, retention, and renewal. Includes English (standard and nonstandard; Black English), and creoles; Spanish, French, and immigrant languages from Asia and Europe. This course satisfies the American Cultures requirement. (F,SP)

84. Sophomore Seminar. (1.2) Course may be repeated for credit as topic varies. One hour of seminar per week for one semester; two one-hour discussion sections per week for one semester. 4-5 hours of seminar per week per unit for 10 weeks. Two hours of seminar per week per unit for eight weeks. Three hours of seminar per week per unit for five weeks. Sections 1-2 to be graded on a passed/not passed basis. Sections 3-4 to be graded on a letter-grade basis. Prerequisites: At discretion of instructor. Sophomore seminars are small interactive courses of 10-12 students taught by faculty members from across the campus. Sophomore seminars offer opportunity for close, regular intellectual contact between faculty members and students in the crucial second year. The topics are decided by department and semester to semester. Enrollment limited to 15 sophomores.

97. Field Studies in Applied Cognitive Linguistics. (2-3) Course may be repeated for a maximum of 4 units. One hour of lecture, one hour of discussion, and three hours of tutorial per week. Must be taken on a passed/not passed basis. Prerequisites: 9 or 100 Cognitive Science is and interdisciplinary field combining methods and findings from linguistics, psychology, computer science, philosophy, and neuropsychology to understand the nature of the mind. This course focuses on current cognitive accounts about language processing and explores how these findings can inform tutoring and tutor training. Specifically, students will examine findings that will give them insight into internal processes that underlie human language in order to use this insight to improve their skills as tutors of non-native speakers of English. Lectures, presented by faculty from Linguistics, Education, Psychology, Cognitive Science, and others, will cover specific foci within cognitive science that relate to education and language acquisition. Subsequent discussion sections will examine specific tutoring scenarios that build on these lectures. Students will then have the opportunity to apply this knowledge during one-on-one tutoring sessions with non-native speakers at UC Berkeley’s Student Learning Center.

98. Directed Group Study. (1-4) Course may be repeated for credit. Must be taken on a passed/not passed basis.
100. Introduction to Linguistic Science. (3) Three hours of lecture and one hour of discussion per week. A basic technical introduction to linguistic science. Practice in phonetics, production, and transcription; practice in phonological and morphological analysis; basic steps in grammatical parsing and textual analysis. (F,SP)

C104. The Mind, Language, and Politics. (3) Three hours of lecture and one hour of discussion per week. Prerequisites: Computer Science C101, C103, or Computer Science C100. An introduction to on-line political science. An analysis of contemporary liberal and conservative thought and language, in terms of the basic mechanisms of mind: frames, prototypes, radial categories, contents of concepts, metaphor, metonymy, and blends. The framework of this course is to provide students interested in political and social issues with the tools to analyze the framing of, and logic behind, contemporary political discourse. Also listed as Cognitive Science C104. G. Lakoff

C105. The Mind and Language. (4) Three hours of lecture and one hour of discussion per week. Formerly 105. Conceptual systems and language from the perspective of psychology and philosophy. How language provides insight into conceptual structure, reasoning, category-formation, metaphorical understanding, and the framing of experience. Cognitive versus formal linguistics. Implications from and for philosophy, anthropology, literature, and politics. Prerequisites: Cognitive Science C101. (SP) G. Lakoff, Sweetser

106. Metaphor. (3) Three hours of lecture and one hour of discussion per week. Prerequisites: Lower division students must have instructor approval. The role of metaphor in shaping our everyday language, conceptual system, and world view. Topics include cross-cultural differences, literary metaphor, sound symbolism, and related theoretical issues in philosophy, linguistics, psychology and anthropology. G. Lakoff, Sweetser

C107. The Mind and Mathematics. (3) Three hours of lecture and one hour of discussion per week. Prerequisites: Some background in either cognitive science, mathematics, philosophy, linguistics, or another relevant discipline. The analysis of mathematical ideas from the perspective of cognitive science. How ordinary mechanisms of mind (e.g., conceptual metaphor and blending) characterize laws of arithmetic, sets, logic, trigonometry, and imaginary numbers. The basic metaphor of infinity and its application to infinite sets, points at infinity, infinitesimals, transfinite numbers, and limits. The meaning of Euler’s equation: e^pi = -1. Mathematics is an objective feature of the universe. Also listed as Cognitive Science C107. G. Lakoff

C108. The Challenge of Cognitive Science to Western Philosophy. (4) Three hours of lecture/discussion per week. Prerequisites: Some background in either cognitive science or philosophy. Three major results of cognitive science are inconsistent with most of Western philosophy: the embodiment of mind, the cognitive unconscious, and metaphorical thought. The course rethinks philosophy from a cognitive science perspective, including basic philosophical concepts—time events, causation, the mind, the self, and morality—and the cognitive structure of the philosophical theories of the Presocratics, Plato, Aristotelian, Descartes, Kant, analytic philosophy (especially Quine), and Chomsky. Also listed as Cognitive Science C108. G. Lakoff

C109. The Neural Basis of Thought and Language. (4) Three hours of lecture and one hour of discussion per week. Prerequisites: Computer Science C101 and Cognitive Science C100. An examination of various linguistic subsystems in neural systems and the specific neural structures of language. How is human thought and language processed in the brain? Much of the course will focus on the Neural Theory of Language (NTL), which seeks to answer these questions in terms of architecture and mechanical models of language and human learning phenomena. Also listed as Cognitive Science C110 and Computer Science C182. (SP)

110. Introduction to Phonetics and Phonology. (4) Three hours of lecture and one hour of discussion per week. Prerequisites: 100 or concurrent enrollment. Description and analysis of human speech sounds in their physiological and acoustic aspects, especially as this aids our understanding of sound and the psychological mechanisms serving speech.

111. Phonological Theory. (3) Three hours of lecture per week. Prerequisite: 110. An introduction to the principles of classical generative phonology and non-linear phonology, with extensive data analysis involving a wide range of phonological phenomena.

113. Experimental Phonetics. (3) Three hours of lecture per week. Prerequisites: 110 or equivalent. Practical training in experimental phonetics, acoustic, physiological, and perceptual analysis of speech.

115. Phonology and Morphology. (4) Three hours of lecture and one hour of discussion per week. Prerequisites: 100 or graduate status. An introduction to the study of the structural properties of sentences and the connections between sentence structure and sentence meaning. (SP)

122. Language Typology and Linguistic Universals. (3) Three hours of lecture per week. Prerequisites: 100. Issues in language typology and linguistic universals. An examination of various linguistic subsystems in languages, from syntactic categories to prosodic elements, with particular emphasis on linguistic universals. (SP)

124. Discourse. (3) Three hours of lecture per week. Language beyond the sentence. Global and local properties of language use. Narrative structures, new and old information, subject and topic, foregrounding and backgrounding, etc.

125. Formal Theories of Syntax. (3) Three hours of lecture per week. Prerequisites: 100 and 150. The relation between language use and human actions. Some topics to be explored are situations in which syntactic structure is acquired, the role of social factors, the role of psychological perception of oneself and language, variation in language use. R. Lakoff

129. Syntax and Semantics. (4) Three hours of lecture per week. Prerequisites: 120. The theory of meaning and reference. Three hours of lecture per week. Prerequisites: 120 or consent of instructor. This course will provide a survey of contemporary syntactic theories. These will include such formal theories of syntax as lexical functional grammar (LFG), generalized phrase structure grammar (GPSG), government and binding (GB), relational grammar (RG), etc. Emphasis will be on the development of these theories and on their basic claims and internal organization. The theories will be contrasted in terms of their architectural designs and in their treatment of selected linguistic phenomena.

130. Comparative and Historical Linguistics. (4) Three hours of lecture and one hour of discussion per week. Prerequisites: 100. Methods of reconstruction. Types and explanations of language change. Dialectology. The establishment of language relationships and subgroupings. (F)

131. Indo-European Comparative Linguistics. (3) Three hours of lecture per week. Prerequisites: 130. The affinities of the Indo-European languages and the reconstruction of their common ancestor.

C139. Language Spread. (3) Three hours of lecture per week. Prerequisites: Upper division status or consent of instructor. Linguistic background and the general principles of language spread. Mechanisms of language spread, including creolization-decreolization, language contact, and the role of bilingualism. Case studies in language spread, including Austronesian, Indo-European, Amerindian, Uralic, African, Sinitic, and Australian languages. Relationship of language spread to immigration and cultural diffusion. Also listed as Slavic Languages and Literatures C139. Nichols, Rhodes

140. Introduction to Field Methods. (3) Three hours of lecture per week. Prerequisites: 110 and 115. Training in the discrimination and transcription of the sounds of a particular language. Methods and practice in collecting and processing data from a particular language.

150. Sociolinguistics. (3) Three hours of lecture per week. Prerequisites: 100. General principles of sociolinguistics. Topics to be covered include linguistic pragmatics, variation theory, social and regional dialectology, and oral styles.

151. Language and Gender. (3) Three hours of lecture per week. An overview of research over the past 30 years on the relationship between language and gender: how women’s use of language differs from men’s, in U.S. and other cultures; how men and women are spoken of differently; how women and men have different amounts of access to public and private discourse; gender differences in nondominant groups (e.g., lesbians and gay; African Americans); the role of stereotyping in linguistic differences between the sexes; role of gender in discourse genres. R. Lakoff

155AC. Native America Meets the Europeans. (4) Three hours of lecture per week. Prerequisites: 100. This course is offered pass/fail. This course is the study of language as a history of the Americas. This course will present an overview of the historical contact between Native Americans and Europeans in North America, and examine its linguistic effects. Starting in pre-contact times and continuing through the present, the course will provide an in-depth look at the diversity and richness of Native American languages, as well as how their structure and use has changed in the face of extensive contact with speakers of European languages. The course will also examine the contact that developed between African Americans and the “Five Civilized Tribes” as a result of European-introduced slavery, and how language plays an important role in the evolving identities of people of this heritage. This course satisfies the American Cultures requirement. (F,SP) Rhodes

158. Computational Linguistics. (3) Three hours of lecture per week. Prerequisites: 120 or consent of instructor. Computer Science 3 or 81A recommended. A survey of computational areas and methods in linguistics. Topics include the Chomsky hierarchy, finite-state transducers, context-free grammars, parsing, and probabilistic, two-level phonology, computational morphology, human sentence processing, garden path sentences, lexical access, ambiguity, connectionism, probabilistic algorithms, computational semantics, and computational reconstruction.

170. History, Structure, and Sociolinguistics of a Particular Language. (3) Course may be repeated for credit. Three hours of lecture per week. Prerequisites: As particular instructor requires. In this course, students explore with a faculty member the history, structure, and sociolinguistics of a particular language. Generally, this is a language that is a research interest of the professor. The language investigated changes with each offering of this course.

175. American Indian Languages. (3) Three hours of lecture per week. Introduction to the native languages of the Americas.

181. Lexical Semantics. (3) Three hours of lecture per week. Prerequisites: 127. Lectures and exercises in the description of word meanings, the organization of lexical systems, the lexicalization of particular semantic domains (kinship, color, etc.), and contrastive lexicalization; lexicalization pattern differences across languages.
### Upper Division Courses

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<th>Course Code</th>
<th>Course Title</th>
<th>Units</th>
<th>Prerequisites</th>
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<tbody>
<tr>
<td>H195</td>
<td>Special Study for Honors Candidates</td>
<td>2-4</td>
<td>May be repeated for credit. Three hours of work per week per unit. Hours to be arranged. Pre-requisites: 3.5 GPA or higher. (F, SP)</td>
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<tr>
<td>H195A-H195B</td>
<td>Linguistics Honors Course</td>
<td>2-4</td>
<td>Two three-hour units per unit per hour. Hours to be arranged. Sections 5-10 to be awarded a total of 15 hours of credit. Pre-requisites: 3.5 GPA or higher, overall and in the major. A two-semester course consisting of independent study of an advanced topic, supervised by an instructor in the Department in consultation with a senior honors committee. Thesis is due on the Monday of the 13th week of the second semester, and honors study will be arranged. Must be taken at UC Berkeley. Hours to be arranged. (F, SP)</td>
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### Field Studies in Applied Cognitive Linguistics

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<th>Course Code</th>
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<tr>
<td>197</td>
<td>Field Studies in Applied Cognitive Linguistics</td>
<td>2-3</td>
<td>Course may be repeated for a maximum of 4 units. One hour of lecture, one hour of discussion, and three hours of tutorial per week. Must be taken on a pass/fail/pass-based basis. Pre-requisites: 5 or 100. Cognitive Science is an interdisciplinary field combining methods and findings from psychology, linguistics, computer science, philosophy, and neurophysiology to understand the nature of this mind. This course focuses on the role science findings about language processing and explores how these findings can inform tutoring and tutor-training. Specifically, students will examine findings that will give them insight into the mental processes that underlie human language in order to use this insight to improve their skills as tutors of non-native speakers of English. Lectures, presented by faculty from Linguistics, Education, Psychology, Cognitive Science, and other departments, will cover specific topics within cognitive science that relate to education and language acquisition. Subsequent discussion sessions will examine specific tutoring strategies based on these topics. Students will then have the opportunity to apply this knowledge during one-on-one tutoring sessions with non-native speakers at UC Berkeley's Student Learning Center.</td>
</tr>
</tbody>
</table>

### Directed Group Study and Research

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Units</th>
<th>Prerequisites</th>
</tr>
</thead>
<tbody>
<tr>
<td>198</td>
<td>Directed Group Study and Research</td>
<td>1-4</td>
<td>Course may be repeated for credit. Hours to be arranged. Must be taken on a pass/unsatisfactory basis. Section 5 to be graded on a letter-grade basis. (F, SP)</td>
</tr>
</tbody>
</table>

### Supervised Independent Study and Research

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Units</th>
<th>Prerequisites</th>
</tr>
</thead>
<tbody>
<tr>
<td>199</td>
<td>Supervised Independent Study and Research</td>
<td>1-4</td>
<td>Course may be repeated for credit. Hours to be arranged. Must be taken. Must be taken on a pass/unsatisfactory basis.</td>
</tr>
</tbody>
</table>

### Graduate Courses

#### 200. Graduate Proseminar in Linguistics

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Units</th>
<th>Prerequisites</th>
</tr>
</thead>
<tbody>
<tr>
<td>200</td>
<td>Graduate Proseminar in Linguistics</td>
<td>2</td>
<td>Two 90-minute sections per week. Must be taken. Sections 1-4 to be graded on a pass/unsatisfactory basis. Section 5 to be graded on a letter-grade basis.</td>
</tr>
</tbody>
</table>

#### 201. Advanced Graduate Proseminar in Linguistics

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Units</th>
<th>Prerequisites</th>
</tr>
</thead>
<tbody>
<tr>
<td>201</td>
<td>Advanced Graduate Proseminar in Linguistics</td>
<td>2</td>
<td>Course must be taken at the beginning of graduate student's third year. Two hours of seminar per week. Required of graduate students in program. An introduction to linguistics as a profession, its history, subfields, and methodologies.</td>
</tr>
</tbody>
</table>

#### 202. Advanced Cognitive Linguistics

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Units</th>
<th>Prerequisites</th>
</tr>
</thead>
<tbody>
<tr>
<td>202</td>
<td>Advanced Cognitive Linguistics</td>
<td>3</td>
<td>Three hours of lecture per week. Pre-requisites: 110 or consent of instructor. Examination of complex morphological systems. Issues in the theory of word morphology.</td>
</tr>
</tbody>
</table>

### History of Linguistics

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Units</th>
<th>Prerequisites</th>
</tr>
</thead>
<tbody>
<tr>
<td>231</td>
<td>History of Linguistics</td>
<td>3</td>
<td>Three hours of lecture per week. Pre-requisites: 110 or consent of instructor. The scholarly tradition of historical and comparative linguistics. Methods of reconstruction.</td>
</tr>
</tbody>
</table>

### Sociolinguistics

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Units</th>
<th>Prerequisites</th>
</tr>
</thead>
<tbody>
<tr>
<td>250</td>
<td>Sociolinguistics Analysis</td>
<td>3</td>
<td>Three hours of lecture per week. This series of courses is designed to give graduate students in linguistics and related fields advanced training in current theories and methods of sociolinguistics. The five courses (Variation; Language Contact; Language and Gender; Conversation/Discourse Analysis; Endangered Languages) represent five major foci of current sociolinguistic interest. Students will be exposed to historical overviews, readings, discussions, assignments, and methods and will be expected to do original field research, the results of which are to be presented orally and in a 15- to 25-page research paper. (F,SP) Hinton, R. Lakoff, Variation (3)</td>
</tr>
</tbody>
</table>

### Professional Courses

#### 301. Teaching Practice and Instruction

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Units</th>
<th>Prerequisites</th>
</tr>
</thead>
<tbody>
<tr>
<td>301</td>
<td>Teaching Practice and Instruction</td>
<td>2-4</td>
<td>Three hours to be arranged. Must be repeated on a satisfactory/unsatisfactory basis. Course may be repeated for credit. Credit and grade to be awarded on completion of sequence. Pre-requisites: 205 or 220, and either 210, 211, or 215. Training in eliciton and analysis of linguistic data in a simulated field setting. The same language is used throughout the year.</td>
</tr>
</tbody>
</table>

### Other Courses

- **305. Language Contact.** (3)
- **306. Language and Gender.** (3)
- **307. Conversation/Disourse Analysis.** (3)
- **308. Endangered Languages.** (3)
- **270. Structure of a Particular Language.** (3) Course may be repeated for credit. Hours to be arranged. Must be taken on a satisfactory/unsatisfactory basis. (R, F) |
- **271. Tibeto-Burman Linguistics.** (3) Course may be repeated for credit. Three hours of lecture per week. Prerequisites: 230 and either 210, 211 or 215. Reading and discussion of classic works on Tibeto-Burman. Lolo Burme, Karen, Kachin, Kamarupan, and Himalayish. Reconstruction of Tibeto-Burman. |
- **275. Survey of American Indian Languages.** (3) Course may be repeated for credit. Three hours of lecture per week. Prerequisites: 230 and either 210, 211 or 215. Analysis of the phonological, grammatical, and semantic characteristics of the various languages of Tibeto-Burman. Lolo Burme, Karen, Kachin, Kamarupan, and Himalayish. Reconstruction of Tibeto-Burman. |
- **290. Topics in Linguistic Theory.** Course may be repeated for credit. Prerequisites: Consent of instructor. Seminar or special lecture courses. |
- **290A. Syntax.** (3)
- **290B. Semantics.** (3)
- **290C. Morphology.** (3)
- **290D. Pragmatics.** (3)
- **290E. Phonology.** (3)
- **291. Field and Sociolinguistics.** (3)
- **290L. Additional Seminar on Special Topics to Be Announced.** (3) Course may be repeated for credit. Hours to be arranged. Prerequisites: One full year of graduate study at Berkeley or consent of graduate adviser. (F, SP) |
- **299. Special Individual Study.** (2-8) Course may be repeated for credit. Hours to be arranged. Must be taken on a satisfactory/unsatisfactory basis. (F, SP) |
- **601. Individual Study for Master's Students.** (1-8) Course may be repeated for credit. Course does not satisfy unit or residence requirements for master's degree. Hours to be arranged. Must be taken on a satisfactory/unsatisfactory basis. |
- **602. Individual Study for Doctoral Students.** (1-8) Course may be repeated for credit. Course does not satisfy unit or residence requirements for doctoral degree. Hours to be arranged. Must be taken on a satisfactory/unsatisfactory basis. Prerequisites: One full year of graduate work at Berkeley or consent of graduate adviser. Individual study may be in consultation with the major field adviser, intended to provide an opportunity for qualified students to prepare themselves for the various examinations required of candidates for the Ph.D. (F, SP) |

### Requirements

- **B prefix=language course for business majors**
- **C prefix=core required course**
- **H prefix=honors course**
- **R prefix=course satisfies R&C requirement**
- **AC prefix=satisfies American Cultures requirement**
- **Graduate prefix=course is graduate level course**
- **pass/satisfactory/un satisfactory grade**
- **Graduate Standing or consent of instructor**
- **Graduate Standing or consent of instructor**
Logic and the Methodology of Science (College of Letters and Science)

Group Office: 910 Evans Hall, (510) 642-0665
logic.berkeley.edu

Professors
Robert M. Anderson, Ph.D. Nonstandard analysis (Economics, Mathematics)
Alan Code, Ph.D. Ancient philosophy
Leo A. Harrington, Ph.D. Recursion theory, model theory, set theory (Mathematics)
John Macfarlane, Ph.D. Logic, philosophy of language
Paolo Mancosu, Ph.D. Logic, philosophy of mathematics
George Necula, Ph.D. Electrical engineering and computer science
Thomas Scanlan, Ph.D. Model theory and diophantine geometry

Jack H. Silver, Ph.D. Set theory, model theory (Mathematics)
Theodore A. Slaman, Ph.D. Recursion theory (Mathematics)
Hans Sluga, B.Phil., Ph.D. History of logic, philosophy of mathematics

John Steel, Ph.D. Set theory, descriptive set theory, inner model theory

Umesh V. Vazirani, Ph.D. Complexity theory, cryptography

W. Hugh Woodin, Ph.D. Large cardinals, determinacy and set theory

Ernest W. Adams (Emeritus), Ph.D. Philosophy of science, philosophical logic

John W. Addison (Emeritus), Ph.D. Logic, theory of definability (Mathematics)

David Blackwell (Emeritus), Ph.D. Bayesian statistics, game theory (Statistics, Mathematics)

Manuel Blum (Emeritus), Ph.D. Recursive functions, computational complexity (Electrical Engineering and Computer Sciences)

Charles S. Chandler (Emeritus), Ph.D. Philosophy of mathematics, language, and mind (Philosophy)

William Craig (Emeritus), Ph.D. Foundations of logic, algebraic logic, proof theory (Philosophy)

Donald Davidson (Emeritus), Ph.D. Philosophy of language, theory of art and philosophy of mind (Philosophy)

Lester E. Dubins (Emeritus), Ph.D. Probability (Mathematics, Statistics)

Leon A. Henkin (Emeritus), Ph.D. Algebraic logic, theory of models (Mathematics)

Richard M. Karp (Emeritus), Ph.D. Computational complexity (Electrical Engineering and Computer Sciences, Industrial Engineering and Operations Research, Mathematics)

Paul Kay (Emeritus), Ph.D. Semantics, pragmatics, syntax, lexicon (Philosophy, Linguistics)

Benson Mates (Emeritus), Ph.D. Philosophy (Philosophy)

Ralph N. McKenzie (Emeritus), Ph.D. General algebra, logic (Mathematics)

J. Fritts Staal (Emeritus), Ph.D. Linguistics, philosophy of language (Philosophy, South and Southeast Asian Studies)

Lori A. Zadeh (Emeritus), Ph.D. Artificial intelligence, knowledge-based systems, fuzzy logic, decision analysis (Electrical Engineering and Computer Science)

Overview
The Group in Logic and the Methodology of Science offers an interdisciplinary program of study and research leading to the Ph.D. degree. Although the Department of Mathematics and the Department of Philosophy each offers a Ph.D. degree toward which a student may write a dissertation in logic, the interdisciplinary program is designed for students with a broad interest in logic and the methodology of science who wish to explore the subject in both its mathematical and philosophical aspects. Methodology of science is here understood to mean not only the study of the methods of the sciences by logical and mathematical means. The program is administered by an interdepartmental group which cooperates closely with both the Department of Mathematics and the Department of Philosophy.

Preparation. For admission to the graduate program, students must have completed an undergraduate major in philosophy, or in mathematics, or a joint major in both, including at least one full-year upper-division course in logic. In addition, they must have completed (a) at least one upper-division course in philosophy (b) at least one full-year upper-division course in mathematics (other than logic) if the undergraduate major was philosophy, or in philosophy (other than logic) if the undergraduate major was mathematics. Exceptions to these requirements are permitted only at the discretion of the graduate adviser.

Further information about the program, including a full statement of the requirements for advancement to candidacy, is available online at logic.berkeley.edu or from the Group Administrative Office, Group in Logic and the Methodology of Science, 910 Evans Hall, University of California, Berkeley, CA 94720-3840.

Courses. Courses are chosen with the advice of the graduate adviser from among the offerings of the various departments of the University. In addition to the departments of Mathematics and Philosophy, attention is especially directed to courses in the various science departments, in statistics, and in linguistics.

Logic Colloquium (no credit). Reports on current research and scholarly work by members of the staff, visitors, and graduate students.

Other Departments with Related Programs
Mathematics and Philosophy

Manufacturing Engineering (College of Engineering)

Offices: 4135 Etcheverry Hall (IEOR) or 6189 Etcheverry Hall (MENG)
www.coe.berkeley.edu

Program Overview
Manufacturing Engineering is an interdisciplinary undergraduate program offered jointly by the Department of Industrial Engineering and Operations Research and the Department of Mechanical Engineering. The emphasis of the program is on how to manufacture products and includes quality assurance, machinery design, plant layout, employee supervision, and economic analysis. The program demands creativity and the ability to solve problems and communicate effectively.

Course topics include computer-aided manufacturing, robotics, and automated production systems, high mixture volume manufacturing, systems design and synthesis, reliability, optimization, and manufacturing processes. These fundamentals are applied to a variety of manufacturing industries, including integrated circuit, automobile, steel, and electronics.

Curriculum for the Bachelor's Degree
A total of 120 units is required, including:

- Humanities/Social Studies Electives include six courses of at least 3 units each in humanities and social studies selected from an approved list of courses. Two of these must fulfill the College of Engineering Reading and Composition requirement. Refer to www.coe.berkeley.edu/current_students/hsreq.pdf for details or go to 308 McLaughlin Hall for a handout.

Lower Division. Mathematics 1A-1B, 53, 54; Chemistry 1A; Physics 7A-7B; Engineering 77, 28, 36, 45; Electrical Engineering and Computer Sciences 100. Electives include 4 units of lower division physical science, engineering, mathematics, or statistics courses approved by the adviser.

Upper Division. Engineering 102, 120; Civil Engineering 130; Mechanical Engineering 101, 104, 105, C124; Industrial Engineering and Operations Research 140, 150, 153, 165; and either 130 or 131; Mechanical Engineering 102B or Industrial Engineering and Operations Research 180; Statistics 134. Electives must include two courses from each of the following two groups: Group I: ME 110, 122, 128, 130, 133, 134, 135; Group II: Industrial Engineering 115, 131, 161, 162, 166, 170. If Industrial Engineering 162 is elected, Industrial Engineering 160 should be substituted for Engineering 102.

Mass Communications (College of Letters and Science)

Group Major Office: Division of Undergraduate and Interdisciplinary Studies, 301 Campbell, (510) 642-2383
is.berkeley.edu/units/masscomm

Faculty Advisory Committee
Yale Braudestein (School of Information)
Bruce Cain (Political Science)
John Elwood (Public Policy)
Thomas Goldstein (Journalism and Mass Communications)
Marti Hearst (School of Information)
David Hembree (Journalism)
Neil Henry (Journalism)
Thomas Leonard (University Librarian)
Peter Lyman (School of Information)
Jean P. Retzinger, Ph.D. (Mass Communications)
Laura Staker (Political Science)

Faculty Adviser: Ms. Retzinger.

Student Affairs Officer: Mr. Gaetjens.

Group Major in Mass Communications

The group major in mass communications is administered by the Division of Undergraduate and Interdisciplinary Studies. It applies a range of disciplines in the social sciences and humanities to the understanding of contemporary mass media, their structure, history, content, consequences, and policy implications. The emphasis in the Berkeley program is not on media production, but rather, on the central role that media play in modern society, with special emphasis on political and cultural life.

Declaring the Major

Students planning to declare a major in mass communications are advised to contact the student affairs officer as early as possible in planning their academic programs. Applications are accepted during designated advising hours in the fourth through the 15th week of each term.

Students who wish to declare the major in mass communications:
(1) must have completed at least 30 units of college coursework before applying to the program;
(2) must have completed at least three of the major prerequisites, including Mass Communications 10;
(3) must be currently enrolled in any remaining prerequisite at the time of application (see list of approved major prerequisites below);
(4) must have a minimum GPA of 3.2 in courses relevant to the major; this includes the lower division prerequisite courses and the equivalency of transferred coursework;
(5) should declare the major no later than the semester in which they complete the 70th unit (Junior transfer students should contact the major adviser for Mass Communications regarding their status and the equivalency of transferred coursework.)

Students who meet the above criteria are eligible for admission to the major. Students who do not meet the above criteria but wish to declare mass
an introduction to
A review of primary research

This course explores the history of information
Introduction to the history of advertising and
Survey and critical analysis of theory and re-

39. Freshman Sophomore Seminar. Course may be repeated for credit as topic varies. One hour of lecture per week per unit. Sections 1-2 to be graded on a letter-grade basis. Sections 3-4 to be graded on a passed/not passed basis. Freshman and sophomore seminars offer lower division students the opportunity to explore an intellectual topic with a faculty member and a group of peers in a small-seminar setting. These seminars are offered in all campus departments; topics vary from department to department and from semester to semester. Enrollment limits are set by the faculty, but the suggested limit is 25. (F,SP)

84. Sophomore Seminar. (1,2) Course may be repeated for credit as topic varies. One hour of seminar per week per unit for 15 weeks. One and one-half hours of seminar per week per unit for 10 weeks. Three hours of seminar per week per unit for eight weeks. Three hours of seminar per week per unit for five weeks. Sections 1-2 to be graded on a passed/not passed basis. Sections 3-4 to be graded on a letter-grade basis. Prerequisites: At discretion of instructor. Sophomore seminars are small interactive courses offered by fellow students in departments across the campus. Sophomore seminars offer opportunity for close, regular intellectual contact between faculty members and students in the crucial second year. The topics vary from department to department and semester to semester. Enrollment limited to 15 sophomores. (F,SP)

101. The Structure of Mass Communications. (4) Three hours of lecture and two hours of discussion per week. Prerequisites: 10, or consent of instructor. Analysis of contemporary structures of mass communications, primarily in capitalist societies, with historical background of the popular press, radio, and television. The organization of news and entertainment. Comparison with other societies. (SP) Staff

102. The Effects of the Mass Media. (4) Course may be repeated for credit as topic varies. Three hours of lecture per week. Prerequisites: 10 or consent of instructor. Survey and critical analysis of theory and research on the effects of media exposure and media messages. (F,SP) Reitziger

C196W. Special Field Research. (10.5) Course may be repeated for credit as topic varies. Four hours of lecture per week. Prerequisites: 10 or consent of instructor. Focus may be on the press and publishing, broad-casts, documentaries, or new media. Possible topics: Pacific Rim press; mass media in China; Israeli and Palestinian media. Also listed as Interdisciplinary Studies Field Maj C126 and American Studies C160.

170. Cultural History of Advertising. (3) Course may be repeated for credit as topic varies. Three hours of lecture per week. Prerequisites: 10 or consent of instructor. Introduction to the history of advertising and the roots of consumer culture in the United States. Presents constrasting approaches to the study of advertising and the analysis of advertising themes and images. Reitziger

180. Topics in Television. (4) Course may be repeated for credit as topic varies. Four hours of lecture per week. Prerequisites: 10 or consent of instructor. This course examines contemporary approaches to the study of television, including the television's social, political, commercial and cultural dimensions. Readings and assignments require students to apply critical perspectives to television programming and to the analysis of individual television texts. Staff

190. Special Topics in Mass Communications. (2-4) Course may be repeated for credit. Two to four hours of seminar per week. Prerequisites: Consent of instructor. Normally open only to mass communications majors who have already completed 12 units of upper division work in the major. Advanced study in mass communications with topics to be announced each semester. (F,SP) Staff

C196W. Special Field Research. (10.5) Course may be repeated for a maximum of 30 hours of work per semester plus regular meetings with the faculty supervisor. Students work in selected internship programs approved in advance by the faculty coordinator and for which written contracts have been established between the sponsoring organization and the student. Students will be expected to produce two progress reports for their faculty coordinator during the course of the internship, as well as a final paper for the course consisting of at least 35 pages. Other restrictions apply; see faculty advisor. Also listed as Gender and Women's Studies C196W, History of Art C196W, Undergraduate Interdisciplinary Studies C196W, History C196W, Political Economy of Industrial Soci C196W, Political Science C196W, and Sociology C196W.

198. Directed Group Study for Advanced Undergraduates. (1-4) Course may be repeated for credit. Must be taken on a passed/not passed basis. Prerequisites: 10 or consent of instructor. Regulations, letters and Science. Seminars for the group study of selected topics not covered by regularly scheduled courses. Topics will vary from year to year. (F,SP) Staff

199. Supervised Independent Study for Advanced Undergraduates. (1-4) Course may be repeated for credit. Enrollment is restricted; see the Introduction to Courses and Curricula section of this catalog. Must be taken on a passed/not passed basis. Independent study and research by arrangement with faculty. (F,SP) Staff

communications should submit a letter of appeal along with a completed application.
Applications and instructions regarding the ad-
mission and appeal process may be obtained from the Mass Communications Office in 343 Campbell Hall.

Transfer Students
Transfer students may complete Mass Communic-
i 
10. Mass Communications in America: An Intro-
at 

Lower Division Courses
10. Mass Communications in America: An Intro-
at 

101. History 7B, 124A, 124B or 131B;
104. Business Administration 160), UGBA 165 (formerly Business Administra-
105. Sociology 1 or 3;

Requirements for Graduation
(These requirements are in addition to the pre-
requisites for admission to the major)
At least 30 upper division units distributed over the following three areas:
A. The following three core courses in mass commu-
cations: Mass Communications 101, 102, and 104.
B. One of the following methods courses: Anthro-
pology 190A; Mass Communications 130; Political Science 5 or 132A-132B; Psychology 101; Soci-
ology 5 or 105.
C. Five courses from the following list: Anthro-
pology 144, 149, 156B, 165, 166; English 173, 176; Journalism 140, 141, 163, 180; Linguistics 150;
Mass Communications 160, 170, 180, 190; Political Science 161, 162, 164A, 164B, 166B-168B;
Psychology 123, 124, 160, 162, 165; Sociology 110, 140, 150, 156, 160, 170; UGBA 106 (formerly Business Administra-
tion 160); UGBA 165 (formerly Business Administration 165).

All requirements for graduation in the major must be taken for a letter grade.

Any substitutions must be approved by the major adviser.

Honor's Program
To be admitted to the honors program, a student must have attained at least a 3.5 grade-point aver-
age in the University and a 3.5 grade-point average in the major. In order to be granted honors, a stu-
dent must write a thesis which in the judgment of the thesis director and the adviser is characterized by superior distinction (Mass Communications H195).

160. International Media. (3) Course may be repeated for credit as topic varies. Three hours of lecture per week. Prerequisites: 10 or consent of instructor. Case study of the foreign mass media. Focus may be on the press and publishing, broadcasting, doc-
umentaries, or new media. Possible topics: Pacific Rim press; mass media in China; Israeli and Palestinian media. (F,SP) Staff

C160. International Media. (3) Course may be repeated for credit as topic varies. Three hours of lecture per week. Prerequisites: 10 or consent of instructor. Formerly 160. Case studies of the foreign mass media. Focus may be on the press and publishing, broad-
casts, documentaries, or new media. Possible topics: Pacific Rim press; mass media in China; Israeli and Palestinian media. Also listed as Interdisciplinary Studies Field Maj C126 and American Studies C160.

180. Topics in Television. (4) Course may be repeated for credit as topic varies. Four hours of lecture per week. Prerequisites: 10 or consent of instructor. Course examines contemporary approaches to the study of television, including the television's social, political, commercial and cultural dimensions. Readings and assignments require students to apply critical perspectives to television programming and to the analysis of individual television texts. Staff

190. Special Topics in Mass Communications. (2-4) Course may be repeated for credit. Two to four hours of seminar per week. Prerequisites: Consent of instructor. Normally open only to mass communications majors who have already completed 12 units of upper division work in the major. Advanced study in mass communications with topics to be announced each semester. (F,SP) Staff

H195. Honors Colloquium. (3) Three hours of seminar per week. Prerequisites: Open only to honors seniors in the group major in Mass Communications. Under the supervision of the instructor, students will work to-
ward preparing scholarly theses in the field, basing their work on theoretical considerations and, where ap-
licable, analyzing empirical data. (SP) Reitziger

C196W. Special Field Research. (10.5) Course may be repeated for a maximum of 30 hours of work per semester plus regular meetings with the faculty supervisor. Students work in selected internship programs approved in advance by the faculty coordinator and for which written contracts have been es-
tablished between the sponsoring organization and the student. Students will be expected to produce two progress reports for their faculty coordinator during the course of the internship, as well as a final paper for the course consisting of at least 35 pages. Other restric-
tions apply; see faculty advisor. Also listed as Gender and Women's Studies C196W, History of Art C196W, Undergraduate Interdisciplinary Studies C196W, History C196W, Political Economy of Industrial Soc C196W, Political Science C196W, and Sociology C196W.

198. Directed Group Study for Advanced Under-
grades. (1-4) Course may be repeated for credit. Must be taken on a passed/not passed basis. Pre-
rerequisites: 10 or consent of instructor. Regulations, letters and Science. Seminars for the group study of selected topics not covered by regularly scheduled courses. Topics will vary from year to year. (F,SP) Staff

199. Supervised Independent Study for Advanced Undergraduates. (1-4) Course may be repeated for credit. Enrollment is restricted; see the Introduction to Courses and Curricula section of this catalog. Must be taken on a passed/not passed basis. Independent study and research by arrangement with faculty. (F,SP) Staff

*Professor of the Graduate School *Recipient of Distinguished Teaching Award
Materials Science and Engineering (College of Engineering)

Department Overview

The Department of Materials Science and Engineering (MSE) administers undergraduate and graduate programs in materials science and engineering. MSE undergraduate students may be admitted to one of five joint major programs. Materials Science and Engineering deals with natural and man-made materials—their extraction, processing, degradation, and characterization for technological uses. Advanced engineering activities that depend upon optimized materials include medical device and healthcare industries, electronics and photovoltaics, aerospace and automotive industries, advanced batteries and fuel cells, and the emerging field of nanotechnology. Students in materials science and engineering apply a basic foundation of chemistry, physics, and biology, and engineering to fields of specialization, including biomaterials; chemical and electrochemical materials science and engineering; computational materials science and engineering; electronic, magnetic, and optical materials; and materials for energy technologies. Materials Science and Engineering plays an important role in all of these specializations.

Biomaterials. Traditionally, biomaterials encompass synthetic alternatives to the native materials found in the human body. A central limitation in the performance of traditional materials used in the medical field, biotechnological, and pharmaceutical industries is that they lack the ability to integrate with biological systems through either a molecular or cellular pathway, which has relegated biomaterials to behavior dictated by the constituents of a particular environment, leading to unfavorable outcomes and device failure. The design and synthesis of materials that circumvent their passive behavior in complex mammalian cells is the focus of the work conducted within the MSE department at Berkeley.

Chemical and Electrochemical Materials Science and Engineering. This area includes both the chemical and electrochemical processing of materials, and the chemical and electrochemical behavior of materials. The former includes the scientific and engineering principles used in mineral processing, smelting, leaching, and refining materials, along with numerous etching and deposition techniques. The latter includes the environmental degradation of materials, the compatibility of materials with specific environments, along with materials used in advanced energy storage devices.

Computational Materials Science and Engineering. Computational methods are becoming increasingly useful in materials science and engineering. Such methods range from the theoretical prediction of the electronic and structural properties of materials to modeling fluid flow in advanced ceramic systems, or modeling the chemical kinetics and equilibria in a materials processing operation.

Electronic, Magnetic, and Optical Materials. This group of materials is defined by its functionality. Semiconductors, metals, and ceramics are used today to form highly complex systems such as integrated electronic circuits, opto-electronic devices, and magnetic and optical mass storage media. In intimate contact, the various materials, with precisely controlled properties, perform numerous functions including the acquisition, processing, transmission, storage, and display of information. EMO materials research combines the fundamental principles of solid-state physics and chemistry, electronic and chemical engineering, and materials science. Nanoscale science and engineering is of increasing importance in this field.

Materials for Energy Technologies. In many if not all technologies, it is materials that play a crucial, enabling role. “Materials for Energy Technologies” examines materials properties, already developed or still searched for, that have played such an enabling role. Specific energy technologies are, such as photovoltaics, nuclear, solar, thermo-electrics, fuel cells, etc., and their essential materials properties are studied. Courses are selected from undergraduate offerings in these fields in Materials Science and Engineering, Chemical Engineering, Nuclear Engineering, and Electrical Engineering. One course on Energy Policy may be included.

Nanomaterials. The materials science at the nanoscale provides a rich playing field that is at the confluence of basic science (physics, chemistry, biology, and mathematics) and the engineering discipline. The latter includes the concentration of nanomaterials within and into other materials with a comprehensive view of the key materials science issues in nanoscience and nanotechnology. Specifically, new courses on nanomaterials, nanoscale processing, nanoscale characterization, and computational approaches to understand nanomaterials are being offered under this concentration.

Structural Materials. This area focuses on the relationships between the chemical and physical structure of materials and their properties and performance. Regardless of the material class—metallic, ceramic, polymeric, or composite—an understanding of the structure-property relationships provides the scientific basis for designing materials for advanced applications. Fundamental and applied research in this field responds to an ever-increasing demand for improved or better-characterized materials.

Undergraduate Program

Students must complete a total of 121 units, including units in humanities and social studies.

Lower Division. Required: Mathematics 1A-1B, 53-54; Chemistry 1A-1B; Physics 7A-7B-7C; Engineering 77, 36, 45; 15 units of electives. Note: Students may take Mathematics 53 or 54 in their junior year without delay in the progress toward the degree, provided they have completed a total of 60 units in the first two years.

Upper Division. Required: Chemical Engineering 178; Engineering 115, 117; Civil and Environmental Engineering 130; Materials Science and Engineering 100, 102, 103, 104, 111, 112, C113, 130A; elective from the Materials Science and Engineering 120 series; and 18 units of upper division electives. Students must satisfactorily complete such courses, including the college humanities and social studies requirement and the departmental requirement of upper division technical electives.

Courses selected to satisfy the technical elective requirement are chosen to emphasize biomaterials; electronic materials; materials physics and chemistry; structural materials; or a general emphasis. A minimum of three courses, selected in agreement with the undergraduate adviser, should constitute an integrated program in another engineering field, such as materials science and engineering, ceramics, or mechanics. Humanities/Social Studies Electives include six courses of at least 3 units each in humanities and social studies selected from an approved list of courses. Two of these must fulfill the College of Engineering Reading and Composition requirement. Refer to www.coe.berkeley.edu/current_students/hssreq.pdf for details or go to 308 McLaughlin Hall for a handout. Double major students will be required to take five of these courses. One course in the Materials Science and Engineering 120 series is required. Course selection is based on individual interests. Additional math and 120 series courses may be taken to fulfill the upper division technical elective requirement.

Graduate Study

Qualified holders of the bachelor’s degree in fields such as materials science and engineering, ceramic engineering, metallurgy, physics, chemistry, and various fields of engineering can all successfully undertake graduate study in materials science. A combination of coursework and research normally leads to the M.S., M.Eng., and Ph.D. degrees, qualifying the graduate for a wide range of positions in industry, governmental organizations, or universities that entail research or development in the production, development, and use of materials. The coursework includes a core program in materials science and engineering, along with additional courses that provide breadth. M.S. students may elect to follow the designated emphasis in nanoscience science and engineering. Further information is available at nano.berkeley.edu/ educational/DEGradeGroup.html.

Topics for graduate research include studies in biomaterials and chemical and electrochemical materials science and engineering, computational materials science and engineering, electronic, magnetic, and optical materials, and structural materials. A wide variety of facilities is available for processing, including thin film deposition by Molecular Beam Epitaxy, Pulsed Laser Deposition, and other physical and chemical deposition techniques. Techniques
such as transmission and scanning electron microscopy, surface characterization, optical spectroscopies, electron paramagnetic resonance, electron microscopy, X-ray diffraction, X-ray absorption spectroscopy, differential thermal analysis, precise calorimetry, and cryogenic and high temperature mechanical testing are used for fundamental characterization of the structure and properties of materials. These techniques are found in Berkeley’s Microfabrication Laboratory, the Integrated Materials Laboratory, and Lawrence Berkeley National Laboratory, including the National Center for Electron Microscopy and the Advanced Light Source, can be used for graduate research.

Lower Division Courses

24. Freshman Seminar. (1) One hour of lecture/discussion per week. Must be taken on a passed/not passed basis. The Freshman Seminar Program has been designed to provide new students with the opportunity to explore an intellectual topic with a faculty member in a small seminar setting. Freshman seminars are offered in all campus departments, and topics vary from department to department and semester to semester. Enrollment limited to 20 freshmen. Staff

84. Sophomore Seminar. (1,2) Course may be repeated for credit as topic varies. One hour of seminar per week for ten weeks. Offered in sections 1-2 to be graded on a passed/not passed basis. Sections 3-4 to be graded on a letter-grade basis. Prerequisites: At discretion of instructor. Sophomore seminars are small interactive courses of five to twelve hours per week per unit for five weeks. Each section will be graded on a passed/not passed basis. Staff


C113. Mechanical Behavior of Engineering Materials. (3) Three hours of lecture and one hour of discussion per week. Prerequisites: Civil Engineering 130 and Engineering 45. Formerly 113 and Mechanical Engineering 102A. Three hours of lecture and one hour of discussion per week. Prerequisites: Civil Engineering 130 and Engineering 45. Formerly 113 and Mechanical Engineering 102A. Three hours of lecture and one hour of discussion per week. (F) Ritchie

117. Properties of Dielectric and Magnetic Materials. (3) Three hours of lecture per week. Prerequisites: Physics 21A and 21B or consent of instructor. 111 is recommended. Introduction to the physical principles underlying the dielectric and magnetic properties of solids. Processing-microstructure-properties relationships. Materials including piezoelectric, pyroelectric, and ferroelectric oxides, and magnetic materials, including hard and soft ferromagnets, ferrites and magneto-optic and -resistive materials. Design properties for applications. (SP) Evenson

C118. Biological Performance of Materials. (4) Three hours of lecture and one hour of discussion per week. Prerequisites: Molecular and Cell Biology 102, 130 (recommended), and Engineering 45, 115 or equivalent. This course is intended to give students the opportunity to focus on topics related to biomedical materials selection and design. Structure-property-relationship of biomedical materials and their interaction with biological systems will be addressed. Applications of materials developed include blood-materials compatibility, biomimetic materials, hard and soft tissue-materials interactions, drug delivery, tissue engineering, and biotechnology. Also listed as Bioengineering C118. (F) Healy

120. Materials Production. (3) Three hours of lecture per week. Significance of materials. Occurrence of raw materials. Scientific and engineering principles relevant to materials production and processing. Methods for production of major materials. (F) Evans

121. Metals Processing. (3) Three hours of lecture per week. Prerequisites: Engineering 45. The principles of metalurgy are emphasized on the use of phase transformations to establish microstructures which impart desirable engineering properties. The techniques discussed include solidification, thermal and mechanical processing, powder processing, welding and joining, and surface treatments. (SP) Goranson

122. Ceramic Processing. (3) Three hours of lecture per week. Prerequisites: Engineering 45, 115. Powder fabrication by burning and chemical methods, rheological behavior of powder-fluid suspensions, forming methods, drying, sintering, and grain growth. Relation of processing steps to microstructural development. (SP) Glaser

123. Semiconductor Processing. (3) Two hours of lecture and one hour of discussion per week. Prerequisites: 111 or Physics 7A-B-C-D and consent of instructor. Semiconductor purification and crystal growth techniques; impurity by diffusion, ion implantation and alloy regrowth; contact formation, metallurgy, chemical processing, semiconductor analysis. (F) Wu

125. Thin-Film Materials Science. (3) Three hours of lecture per week. Prerequisites: Upper division or graduate standing in engineering, physics, chemistry, and chemical engineering. Engineering 45 required; 111 or Physics 14A recommended. Deposition, processing, and characteristics of thin films and their technological applications. Physical and chemical vapor deposition methods. Thin-film nucleation and growth. Thermal and ion enhanced processing. Microstructure, optical, electrical, and chemical properties of metals, ceramics, semiconductors, and thin films. Electrochemical and thin-film techniques will be employed for processing of materials. (F) Dubon

130. Experimental Materials Science and Design. (3) Two hours of lecture and three hours of laboratory per week. Prerequisites: Senior standing or consent of instructor. This course provides a culminating experience for students approaching completion of the major. Covered will include inorganic solids, nanomaterials, and catalysis. Experiments are undertaken in a variety of areas from the investigations on semiconductor materials to corrosion science and elucidate the relationships among materials science and engineering design. The principles of materials selection in engineering design are reviewed. (F) Dubon

130A. Experimental Materials Science. (3) One and one-half hours of lecture and four and one-half hours of laboratory per week. Prerequisites: 102, 103, 111, and 115 or Engineering 45. Three hours of lecture per week. Significance of materials. Occurrence of raw materials. Scientific and engineering principles relevant to materials production and processing. Methods for production of major materials. (F) Evans

130B. Materials Science and Engineering Design. (3) Three hours of lecture and three hours of laboratory per week. Prerequisites: Chemistry 104B is recommended. The application of basic chemical principles to problems in materials discovery, design, and characterization will be discussed. Topics related to materials production and processing, and properties of advanced materials will be emphasized. (SP) Staff

C150. Introduction to Materials Chemistry. (3) Three hours of lecture and one hour of discussion per week. Prerequisites: Chemistry 104B is recommended. The application of basic chemical principles to problems in materials discovery, design, and characterization will be discussed. Topics related to materials production and processing, and properties of advanced materials will be emphasized. (SP) Staff

H194. Materials Undergraduate Research. (1-4) Course may be repeated for credit. Variable format. Prerequisites: Upper division technical GPA of 3.3 or higher and consent of instructor and advisor. Students who have completed a satisfactory number of advanced courses with a technical GPA of 3.3 or higher may pursue original research under the direction of one of the members of the staff. A maximum of 3 units of H194 may be used to fulfill technical elective requirements in the Materials Science and Engineering program or double majors (unlike 198 or 199, which do not satisfy technical elective requirements). Final report required. (F,SP) Staff

195. Special Topics for Advanced Undergraduates. (1) One hour of directed group study per week. Prerequisites: Upper division standing (2.0 GPA and above). Group study of special topics in materials science and engineering. Selection of topics for further study of underlying concepts and relevant literature, in conjunction with appropriate faculty members. (F,SP) Staff

198. Directed Group Studies for Advanced Undergraduates. (1-4) Must be taken on a passed/not passed basis. Prerequisites: Upper division standing in Engineering. Group studies of selected topics. (F,SP) Staff

199. Supervised Independent Study. (1-4) Course may be repeated for a maximum of four units per semester. Individual conferences. Must be taken on a passed/not passed basis. Prerequisites: Consent of in...
200A. Survey of Materials Science. (4) Four hours of lecture per week. Prerequisites: Graduate standing or consent of instructor; A survey of Materials Science at the beginning graduate level, intended for those who did not major in the field as undergraduates. Focuses on the nature of microstructure and its manipulation and control to determine engineering properties. Reviews thin-film deposition, nanostructured chemical, electromagnetic and mechanical properties of materials, and introduces the student to microstructural engineering. (F;SP) Chrzan, Morris

202. Crystal Structure and Bonding. (3) Three hours of lecture, two hours of laboratory per week. Prerequisites: 102, 103, 115, or consent of instructor. 201A is prerequisite to 201B. The laws of thermodynamics, fundamental equations for multicomponent elastic solids and electromagnetic media, equilibrium criteria, Application to solution thermodynamics, point defects in solids, phase diagrams. Phase transitions, Landau rule, symmetry rules. Interfaces, nucleation theory, elastic effects. Kinetics: diffusion of heat, mass and charge; coupled flows. (F;SP) Chrzan, Morris

204. Theory of Electron Microscopy and X-Ray Diffraction. (3) Three hours of lecture per week. Prerequisites: 102, 103 or equivalent. Basic principles of techniques used in the characterization of engineering materials by electron microscopy, diffraction, and spectroscopy. Also listed as Civil and Environmental Engineering C236. (SP) Govindjee, Li

205. Defects in Solids. (3) Three hours of lecture per week. Prerequisites: Physics 7C or consent of instructor. Many properties of solid state materials are determined by the presence of defects. This course treats in detail the structure of crystal defects, defect formation and annihilation processes, and the influence of lattice defects on the physical and optical properties of crystalline materials. (F) Weber

206. Dislocations and Dislocation Plasticity. (3) Three hours of lecture per week. Prerequisites: 113, 200A, or equivalent. The principles of dislocation theory and the strength and deformation of crystalline solids. Dislocation geometry, stress-strain fields, associated self-energies, and forces exerted by externally applied stresses. Structures, core types, stacking faults, and sessile and glissile configurations. Dislocation-defect interactions and multiple dislocation patterns, dislocation-array descriptions of grain boundaries, and mechanisms of multiplication and hardening. (SP) Morris

C211. Mechanics of Solids. (3) Students will receive no credit for 231 after taking Civil Engineering 231A or 231B prior to Fall 1992. Three hours of lecture per week. Prerequisites: Graduate standing or consent of instructor. Mechanical response of materials: Simple tension in one, two and three dimensions, structural stability, etc. Continuum mechanics: the stress and strain tensors, equilibrium, compatibility. Three-dimensional elastic, plastic and viscoelastic problems. Thermal, transformation, and dealing stresses. Applications: Plane problems, stress concentrations at defects, metal forming problems. Also listed as Civil and Environmental Engineering C231. (F) Govindjee

C212. Deformation and Fracture of Engineering Materials. (4) Four hours of lecture per week. Prerequisites: Civil Engineering 130, Engineering 45. Formerly 214. Fundamental and fractographic behavior of engineering materials for both monotonic and cyclic loading conditions. Also listed as Mechanical Engineering C225. (SP) Ritchie

213. Environmental Effects on Materials Properties and Behavior. (3) Three hours of lecture per week. Prerequisites: Materials Science and Engineering 120 or equivalent. Materials in the first instance are chemical, electromagnetic and mechanical properties of materials, and introduces the student to microstructural engineering. (F) Haller

201A-201B. Thermodynamics and Phase Transformations in Solids. (4;4) Four hours of lecture per week. Prerequisites: 102, 103, Engineering 115, or consent of instructor. 201A is prerequisite to 201B. The laws of thermodynamics, fundamental equations for multicomponent elastic solids and electromagnetic media, equilibrium criteria, Application to solution thermodynamics, point defects in solids, phase diagrams. Phase transitions, Landau rule, symmetry rules. Interfaces, nucleation theory, elastic effects. Kinetics: diffusion of heat, mass and charge; coupled flows. (F;SP) Chrzan, Morris

224. Magnetism and Magnetic Materials. (3) Three hours of lecture per week. Prerequisites: 111 or equivalent or consent of instructor; 117 recommended. This course covers the fundamentals of magnetism and magnetic materials. Topics include magnetic moments in classical versus quantum mechanical pictures, diamagnetism, paramagnetism, crystal field environments, dipolar and exchange interactions, ferromagnetism, antiferromagnetism, magnetic domains, magnetic anisotropy, and magnetostriiction. Magnetic materials covered include transition metals, their alloys and oxides, rare earths and their oxides, organic and molecular magnets. Throughout the course, experimental techniques in magnetic characterization will be discussed. The second part of the course will focus on particular magnetic materials and devices that are of technological interest (e.g., magneto- and photonic devices and devices). Additional topics include biomagnetism and spin glasses. (F) Suzuki

C225. Thin-Film Science and Technology. (3) Three hours of lecture per week. Prerequisites: Graduate standing in engineering, physics, chemistry, or chemical engineering. This course covers the fundamentals of thin films by ion implantation and rapid thermal annealing. Processing-microstructure-property-performance relationships in the context of applications in information storage, ICs, micro-electromechanical systems and optoelectronics. Also listed as Applied Science and Technology C225-SP. (F) DeJonghe

C226. Photovoltaic Materials: Modern Technologies in the Context of a Growing Renewable Energy Market. (3) Three hours of lecture per week. Prerequisites: Material Science and Engineering 111 or 123 or equivalent. Should have a firm foundation in electronic devices and optical properties of semiconductors. Basic semiconductor device physics. This technical course focuses on the fundamentals of photovoltaic energy conversion with respect to the physical principles and design of efficient semiconductor solar cell devices. This course aims to equip students with the concepts and analytical skills necessary to access the utility and viability of various modern photovoltaic technologies and to understand the microstructural evolution and reactions. Comparison of thin-film deposition techniques. Characterization techniques. Processing of thin films by ion implantation and rapid thermal annealing. Processing-microstructure-property-performance relationships in the context of applications in information storage, ICs, micro-electromechanical systems and optoelectronics. Also listed as Applied Science and Technology C225-SP. (F) Haller

227. Solution Processing of Materials, Devices, and Nanostructures. (3) Three hours of lecture per week. Prerequisites: Basic physics oriented towards the study of thermodynamics and kinetic principles underpinning the processing and behavior of advanced materials, devices, and nanostructures in solutions. Principles will be exemplified with model systems, with discussion of other applications. Case studies will examine overall processes invoke combinations of these principles and consider alternative novel strategies. (SP) Doyle

241. Electron Microscopy Laboratory. (2) Six hours of laboratory per week. Prerequisites: 204 (can be taken concurrently). Basic techniques and deformations of transmission, and scanning, electron microscopy; x-ray microanalysis, energy loss spectroscopy; specimen preparation, interpretation of data; individual projects in materials science. (SP) Gronsky

242. Advanced Characterization Techniques. (3) Two hours of lecture and three hours of laboratory per week. Prerequisites: 204 or 205 or consent of instructor. Advanced electrical, optical, magnetic and ion beam characterization techniques including deep level transient spectroscopy, infrared ellipsometry, scanning ion microscopy, paramagnetic resonance, and Rutherford backscattering, are used to characterize crystalline materials (with emphasis on semi-conductors). (SP) Weber

Thermodynamics of surfaces and phase boundaries, surface tension of solids and liquids, surface activity, adsorption, phase equilibria, and contact angles, electro-chemical double layers at interfaces, theory, and applications. (SP) Staff

C251. Introduction to Nano-Science and Engineering. (1-4) Course may be repeated to complete different modules. Three hours of lecture and one hour of discussion per week. Prerequisites: Major in physical science such as chemistry, physics, etc., or engineering; completion of C210. A four-module introduction to the fundamental topics of Nano-Science and Engineering (NSE) theory and research within chemistry, physics, biology, and engineering. This course includes elements of physics, chemistry, materials science, growth fabrication, and characterization techniques; structures and properties of semiconductors, polymer and biomedical materials on nanoscales, and devices based on nanostuctures. Students may take either 3 or 4 units to satisfy the NSE Designated Emphasis requirement. Also listed as Nanoscience and Engineering C201 and Physics C201. (F.S) Staff

290A. Special Topics in Materials Science. (3) Three hours of lecture per week. Prerequisites: Graduate standing in materials science and engineering. (F.S) Staff

290M. Special Problems in Materials Science. (3) Three hours of lecture per week. Prerequisites: 201A-201B or consent of instructor. Selected topics in the thermodynamic, kinetic or phase transformation behavior of materials, topics to be selected based on student interest in greater depth. (SP) Morris

298. Group Studies, Seminars, or Group Research. (1-8) Course may be repeated for credit. Must be taken on a satisfactory/unsatisfactory basis. Advanced study in various subjects through special seminars on topics to be selected each year, informal group studies of special problems, group participation in comprehensive design problems or group research on completion of problems for analysis and experimentation. (F.S) Staff

299. Individual Study or Research. (1-12) Course may be repeated for credit. Must be taken on a satisfactory/unsatisfactory basis. Prerequisites: Graduate standing in engineering. Individual investigation of advanced materials science problems. (F.S) Staff

601. Individual Study for Master’s Students. (1-8) Course may be repeated for credit. Course does not satisfy unit or residence requirements for master’s degree. Must be taken on a satisfactory/unsatisfactory basis. Prerequisites: Graduate standing in engineering. Individual study for the comprehensive or language requirements in consultation with the field adviser. (F.S) Staff

602. Individual Study for Doctoral Students. (1-8) Course may be repeated for credit. Course does not satisfy unit or residence requirements for doctoral degree. Must be taken on a satisfactory/unsatisfactory basis. Prerequisites: Graduate standing in engineering. Individual study in consultation with the major field adviser, intended to provide an opportunity for qualified students to prepare themselves for the various examinations required of candidates for the Ph.D. (and other doctoral degrees). (F.S) Staff

Professional Courses

300. Supervised Teaching of Materials Science and Engineering. (1,2) One to two hours of seminar per week. Must be taken on a satisfactory/unsatisfactory basis. Prerequisites: Graduate standing and approval, or interest in appointment, as a graduate student instructor. Discussion and research of pedagogical issues. Supervised practice teaching in Materials and Science and Engineering. (F.S) Staff

Mathematics

(2009-2010 Academic Calendar)
Department Office: 970 Evans Hall, (510) 642-6550
math.berkeley.edu
Chair: Alan Weinstein, Ph.D.

University Professors
Alexandre J. Chorin, Ph.D. New York University. Applied mathematics, numerical methods, nonlinear PDEs
Richard M. Karp, Ph.D. Harvard University. Computer science and bioengineering

Professors
David Aldous, Ph.D. University of Cambridge. Theoretical and applied probability
Robert M. Anderson, Ph.D. Yale University. Mathematical economics, statistical physics
George M. Bergman, Ph.D. Harvard University. Associative rings, universal algebra and category theory
Richard E. Borcherds, Ph.D. Trinity College, Cambridge. Lie algebras, vertex algebras, automorphic forms
Michael J. Freedman, Ph.D. Princeton University. Harmonic analysis, partial differential equations, complex analysis in several variables
Robert F. Coleman, Ph.D. Princeton University. P-adic geometry and algebraic geometry
James W. Demmel, Ph.D. University of California, Berkeley. Numerical analysis, high performance computing
David Eisenbud, Ph.D. University of Chicago. Algebraic geometry, computation
L. Craig Evans, Ph.D. University of California at Los Angeles. Partial differential equations
Steve Evans, Ph.D. University of Cambridge. Probability and stochastic processes
David A. Fearnley, Ph.D. Princeton University. Foundations of statistics
Edward Frenkel, Ph.D. Harvard University. Representation theory, integrable systems, mathematical physics
Alexander Givental, University of California at Berkeley. Symplectic and contact geometry, singularity theory, mathematical physics
F. Alberto Grünbaum, Ph.D. Rockefeller University. Analysis, probability, integrable systems, medical imaging
Mark Haiman, Ph.D. University of California at Berkeley. Algebra, combinatorics, algebraic geometry
Tien-H. Hsiang, Ph.D. Harvard University. Numerical analysis
Lee A. Hogg, Ph.D. Massachusetts Institute of Technology. Technology, recursion theory, model theory, set theory
Jenny C. Harrison, Ph.D. University of Warwick. Dynamical systems, integration theory
Vaugth F. R. Hudson, Ph.D. University of Chicago. Quantum physics, School of Mathematics, Geneva. Von Neumann algebras
William M. Kahan, Ph.D. Stanford University. Error analysis, numerical computations, computers, convexity, large matrices, trajectory problems
Robbin C. Kirby, Ph.D. University of California at Los Angeles. Topology of manifolds
Michel A. Kass, Ph.D. University of California at Los Angeles. Probability theory, combinatorics
Tsu-Yu Lam, Ph.D. Columbia University. Algebra
Mark A. Leiken, Ph.D. California Institute of Technology. Application of topology
Arthur E. Ogus, Ph.D. University of Harvard. Algebraic geometry
Yuval Peres, Ph.D. Hebrew University. Probability theory and Haussdorf dimension
James Pitman, Ph.D. Stanford University. Probability and stochastic processes
Bjorn Poonen, Ph.D. University of California, Berkeley. Number theory, computational number theory
Marina Ratner, Ph.D. Moscow State University. Ergodic theory
Nicola Šretekshin, Ph.D. Steklov Institute. Mathematical physics, low-dimensional representations
Fragoul Rezakhanlou, Ph.D. University of California. Topology of manifolds
Michael J. Ratner, Ph.D. University of California. Algebra
Louis N.are, Ph.D. Columbia University. Noncommutative harmonic analysis, operator algebras, quantum geometry
Donald E. Sarason, Ph.D. University of Michigan. Complex function theory, operator theory
Vera Serganova, Ph.D. Cambridge University. Representation theory
James A. Sethian, Ph.D. University of California, Berkeley. Applied mathematics, computational physics, partial differential equations
Christina Sherk, Ph.D. Stanford University. Economics, theory, mathematical economics
Jack H. Silverman, Ph.D. University of California, Berkeley. Mathematical logic, theory of sets
Theodore A. Slaman, Ph.D. Harvard University. Recursion theory
John Steel, Ph.D. University of California, Berkeley. Set theory, descriptive set theory
John Strain, Ph.D. University of California, Berkeley. Applied mathematics, computational analysis, fast algorithms, materials science
Bemd Sturmfels, Ph.D. University of Washington, Seattle. Combinatorics, probability, optimization, computation
Daniel N. Tataru, Ph.D. University of Virginia, Charlottesville. Partial differential equations
Peter Teichner, Ph.D. University of Mainz. Geometric and algebraic topology
Constantin Teleman, Ph.D. Harvard University. Lie groups, algebraic geometry, topology, and quantum field theory
San-Vincent Vo, Ph.D. University of Bucharest. Operator algebras

Paul A. Vojta, Ph.D. Harvard University. Number theory
John B. Wagoner, Ph.D. Princeton University. Differential topology, algebraic K-theory, dynamical systems
Alan D. Weinstein, Ph.D. University of California, Berkeley. Symplectic geometry, algebraic geometry
Mariusz Wodzicki, Ph.D. Steklov Mathematical Institute. Noncommutative and algebraic geometry, analysis, K-theory
W. Hugh Woodin, Ph.D. University of California, Berkeley. Set theory, large cardinals
Hung-Hsi Wu, Ph.D. Massachusetts Institute of Technology. Riemannian geometry, differential topology
Maciej Zworski, Ph.D. Massachusetts Institute of Technology. Spectral theory, partial differential equations, microlocal analysis
John W. Addison Jr. (Emeritus), Ph.D. Stanford University. Theory of definability, descriptive set theory, model theory, recursion function theory
William B. Arveson (Emeritus), Ph.D. University of California at Los Angeles. Functional analysis, operator algebras
William G. Bade (Emeritus), Ph.D. University of California at Los Angeles. Harmonic analysis
Elynn R. Berkjamp (Emeritus), Ph.D. Massachusetts Institute of Technology. Lie algebras and Lie groups, coding theory, electrical engineering, computer science
David H. Blackwell (Emeritus), Ph.D. University of Illinois, Urbana-Champaign. Game theory, set theory, stochastic processes, game theory, information theory, linear programming
F. Michael Chamberlain (Emeritus), Ph.D. University of California, Berkeley. Applied mathematics
Paul R. Chernoff (Emeritus), Ph.D. Harvard University. Functional analysis, operator theory
Henry Cordes (Emeritus), Ph.D. University of Gottingen. Classical analysis
Stephen P. L. Diliberto (Emeritus), Ph.D. Princeton University. Ordinary differential equations, celestial mechanics
Morris H. Friedman (Emeritus), Ph.D. Princeton University. Probability, gambling theory
Jacob Feldman (Emeritus), Ph.D. University of Chicago. Ergodic theory
David Gave (Emeritus), Ph.D. Princeton University. Mathematical logic
Robert C. Hartshorne (Emeritus), Ph.D. Princeton University. Algebraic geometry
Henry Helson (Emeritus), Ph.D. Harvard University. Harmonic analysis
Mitts Morris (Emeritus), Ph.D. University of Chicago. Dynamical systems, neural networks, stochastic processes
Gerhard P. Hochschild (Emeritus), Ph.D. University of Pennsylvania. Lie groups, algebraic groups, homological algebra
Wu-Yi Hsiang (Emeritus), Ph.D. University of California at Los Angeles. Group theory, Lie groups, geometry
Shoshichi Kobayashi (Emeritus), Ph.D. University of Chicago. Differential geometry, Riemannian and complex manifolds, several complex variables
R. Sherman Lehman (Emeritus), Ph.D. Stanford University. Number theory, numerical analysis
Hendrik W. Lenstra Jr. (Emeritus), Ph.D. University of Amsterdam. Algebra
Amirona J. de Merts (Emeritus), Ph.D. Stanford University. Algebra
Jerrold E. Marsden (Emeritus), Ph.D. Princeton University. Mechanics, control theory
Ralph N. McKenzie (Emeritus), Ph.D. University of Colorado. Logic, universal algebra
C. Keith Miller (Emeritus), Ph.D. Rice University. Partial differential equations, integral methods for PDEs
Calvin C. Moore (Emeritus), Ph.D. University of Chicago. Representations and actions of topological groups, operator algebra
Andrew P. Ogg (Emeritus), Ph.D. Harvard University. Number theory, elliptic curves
Beresford N. Parlett (Emeritus), Ph.D. Stanford University. Numerical analysis, scientific computation
Murray H. Protter (Emeritus), Ph.D. Harvard University. Partial differential equations
Charles C. Pugh (Emeritus), Ph.D. Johns Hopkins University. Global theory of differential equations
John L. Rhodes (Emeritus), Jr., Ph.D. Princeton University. Topology, group theory
Joseph A. Wolf (Emeritus), Ph.D. Harvard University. Differential geometry, Lie groups, analysis

Associate Professors
Ian Agol, Ph.D. University of California, San Diego. Three-manifolds and hyperbolic geometry
Ming Gu, Ph.D. Yale University. Numerical linear algebra, scientific computing
Lior Pachter, Ph.D. Massachusetts Institute of Technology. Applications of statistics and combinatorics to problems in biology
Thomas Scalon, Ph.D. Harvard University. Model theory and applications to number theory

Assistant Professors
Mina Aganagic, Ph.D. California Institute of Technology. String theory

*Professor of the Graduate School
†Recipient of Distinguished Teaching Award
The Minor Program

Students in the College of Letters and Science may complete one or more minors of their choice, normally in a field both academically and administratively distinct from their major. The minor program in the Department of Mathematics consists of the following coursework:

**Prerequisites:** Mathematics 1A-1B and 53 and 54 (or their equivalents). These courses must be taken for a letter grade and must be passed with average grades of C or better.

**Minor Requirements:** Mathematics 104, 110, 113, and 185, plus one additional upper division mathematics course. These five courses must each be taken for a letter grade and have a minimum grade-point average of 2.0 is required for upper division courses applied to the minor program. At least three of the five courses must be completed at Berkeley. One upper division class from your major may overlap with your minor.

For more information about this program, please contact an undergraduate advisor in 962, 964, or 965 Evans Hall.

Preparation for Graduate Study

Students preparing for the Ph.D. in mathematics are strongly advised to acquire a reading knowledge of two foreign languages among French, German, and Russian. Undergraduate students also often take one or more of the following introductory graduate courses: 202A-202B, 214, 225A-225B, 228A-228B, 250A-250B.

Graduate Programs

The department offers the M.A. degree in mathematics and Ph.D. degrees in mathematics and applied mathematics. Detailed information concerning admission, graduate student stipend and fellowships, and degree requirements is given in the Graduate Announcements of the Department of Mathematics, which is available online at math.berkeley.edu/graduate.html.

Courses and Seminars

Courses and seminars are listed below. More detailed and up-to-the-minute information on semester offerings, instructors, textbooks, course and seminar content, teaching and grading methods, and schedules are posted on the ninth floor of Evans Hall and are available on the Web at math.berkeley.edu.

Math 1A-1B is the calculus sequence intended for students planning majors in mathematics, engineering, or the sciences. The sequence is also acceptable as a substitute for Math 16A-16B. It is designed to prepare students for further courses in mathematics.

Math 16A-16B is a terminal calculus sequence intended for students planning majors in the life or social sciences.

Math 32 is intended for students who wish to take Math 1A or 16A but have not met the prerequisites.

Lower Division Courses

**1A. Calculus.** Students will receive 2 units of credit for 1A after taking 16B and 2 units after taking 16A. Three hours of lecture and two hours of discussion/workshop per week; at the discretion of the instructor, an additional hour of discussion/workshop or computer laboratory per week. Prerequisites: 3.5 in upper division math, including trigonometry. This course is intended for majors in engineering and the physical sciences. An introduction to differential and integral calculus of functions of one variable, with applications and an introduction to transcendental functions. (F.SP)

**1B. Calculus.** Students will receive 2 units of credit for 1B after taking 16B. Three hours of lecture and two hours of discussion/workshop per week; at the discretion of the instructor, an additional hour of discussion/workshop or computer laboratory per week. Prerequisites: 1A. Continuation of 1A. Techniques of integration; applications of integration. Infinite series and sequences. First-order ordinary differential equations; second-order ordinary differential equations; series solutions of ordinary differential equations. (F.SP)

**16A. Analytic Geometry and Calculus.** Students will receive no credit for 16A after taking 16B. Two units of 16B may be used to remove a deficient grade in 1A. Two hours of lecture and one hour of discussion/workshop per week; at the discretion of the instructor, an additional one hour to one and one-half hours of lecture or discussion/workshop per week. Prerequisites: 16A. Continuation of 16A. Application of integration of economics and life sciences. Differential equations. Functions of many variables. Partial derivatives, constrained and unconstrained optimization. (F.SP)

24. Freshman Seminars. (1) Course may be repeated for credit as topic varies. One hour of seminar per week. Sections 1-2 to be graded on a letter-grade basis. Sections 3-4 to be graded on a passed/not passed basis. The Berkeley Seminar Program has been designed to provide new students with the opportunity to explore an intellectual topic with a faculty member in a small-seminar setting. Berkeley Seminars are offered in all departments. This section is topics vary from department to department and semester to semester. (F.SP)

32. Precalculus. (4) Students will receive no credit for 32 after taking 1A-1B or 16A-16B and will receive 3 units after taking 96. Two hours of lecture and two hours of discussion/workshop per week; at the instructor’s option, an extra hour of lecture/discussion per week. Prerequisites: 3.5 years of high school mathematics, plus satisfactory score on one of the following: CEEB MAT test, math SAT, or UC/CSU diagnostic examination. (F,SP) Polynomial and rational functions, exponential and logarithmic functions, trigonometry and trigonometric functions. Complex numbers, fundamental theorem of algebra, mathematical induction, binomial theorem, series, and sequences. (F.SP)

48. Supplementary Work in Lower Division Mathematics. (1-3) Course may be repeated for credit. Meetings to be arranged. Prerequisites: Some units in a lower division Mathematics class. Students with partial credit in lower division mathematics courses may, with consent of instructor, complete the credit under this heading. (F.SP)

53. Multivariable Calculus. (4) Students will receive 1 unit of credit for 53 after taking 50B and 3 units of credit after taking 50A. Three hours of lecture and two hours of discussion/workshop per week; at the discretion of the instructor, an additional hour of discussion/workshop or computer laboratory per week. Prerequisites: 1B. Parametric equations and polar coordinates. Vectors in 2 and 3 dimensions. Partial derivatives. Multiple integrals. Vector calculus. Theorems of Green, Gauss, and Stokes. (F.SP)
54. Linear Algebra and Differential Equations. (4) Students will receive 1 unit of credit for 54 after taking 50A and 3 units of credit after taking Math 50B. Three hours of lecture and two hours of discussion/workshop per week; at the discretion of the instructor, an additional hour of discussion/workshop or computer laboratory per week. Prerequisites: 1B or 1B. This course will cover the same topics as 53; parametric equations and polar coordinates, vectors in 2- and 3-dimensional spaces; partial derivatives, multiple integrals; vector calculus. Theorems of Green, Gauss, and Stokes. No prior computer experience is necessary. (F,SP)

H54. Honors Linear Algebra and Differential Equations. (4) Students will receive 1 unit for H54 after taking 50A and 3 units for taking 50B. Three hours of lecture and two hours of discussion/workshop per week; at the discretion of the instructor, an additional hour of discussion/workshop or computer laboratory per week. Prerequisites: 1B. Honors version of 54. Basic linear algebra; matrix arithmetic and determinants. Vectors; inner product as spaces. Eigenvalues and eigenvectors; linear transformations. Homogeneous ordinary differential equations; first-order differential equations, solution by characteristic. Fourier series and partial differential equations. (F,SP)

53M. Multivariable Calculus with Computers. (4) Students will receive no credit for 53M after taking 53, 1 unit after 50B, and 3 units after 50A. Three hours of lecture and three hours of discussion/microcomputer laboratory per week. Prerequisites: 1B or 1B. This course will cover the same topics as 53; parametric equations and polar coordinates, vectors in 2- and 3-dimensional spaces; partial derivatives, multiple integrals; vector calculus. Theorems of Green, Gauss, and Stokes. (F,SP)

590. Honors Undergraduate Seminar in Mathematical Problem Solving. (1) Course may be repeated for credit. Two hours of seminar per week. Prerequisites: Consent of instructor; undergraduate standing. This seminar is designed especially, but not exclusively, to prepare students for the annual national Putnam Mathematical Competition in December. Students will develop problem solving skills and experience by attempting the solution of challenging mathematical problems that require insight more than knowledge. (F)

H90. Honors Supervised Group Study. (1-4) Must be taken on a passed/not passed basis. Directed Group Study topics vary with instructor. (F,SP)

Upper Division Courses

C103. Introduction to Mathematical Economics. (3) Three hours of lecture per week. Prerequisites: 53 and 54. Formerly 103. Selected topics illustrating the application of mathematics to economic theory. This course is required for students in Mathematics, Statistics, the Physical Sciences, and Engineering, and for economics majors with adequate mathematical preparation. No economic background is required. Also listed as Economics C103. (F,SP)

104. Introduction to Analysis. (3) Three hours of lecture per week; at the discretion of the instructor, an additional two hours of discussion per week. Prerequisites: 53 and 54. The real number system. Sequences, limits, and continuity. The concept of a metric space. Uniform convergence, interchange of limit operations. Infinite series. Mean value theorem and applications. The Riemann integral. (F,SP) Staff

H104. Introduction to Analysis. (3) Three hours of lecture per week. Prerequisites: 53 and 54. Honors section corresponding to 104. Recommended for students who enjoy mathematics and are good at it. Greater emphasis on theory and challenging problems. (F)

105. Second Course in Analysis. (3) Three hours of lecture per week. Prerequisites: 104. Differential calculus in \( \mathbb{R}^n \): derivative as a linear map; the chain rule; vector fields; quadratic forms; and the gradient. Lebesgue integration on the line; comparison of Lebesgue and Riemann integrals. Convergence theorems. Fourier series, \( L^2 \) theory. Fubini's theorem, change of variable. (SP)

110. Linear Algebra. (4) No credit allowed after completion of Math 112 or 113B. Three hours of lecture per week and an additional two hours of discussion at the discretion of the instructor. Prerequisites: 54 or a course with equivalent linear algebra content. Matrices, vector spaces, linear transformations, inner products, determinants, eigenvectors, QR factorization. Quadratic forms and Rayleigh's principle. Jordan canonical form, applications. Linear functionals. (F,SP) Staff

H110. Linear Algebra. (4) No credit allowed after completion of Math 112 or 113B. Three hours of lecture per week and an additional two hours of discussion at the discretion of the instructor. Honors section corresponding to course 110 for exceptional students with strong mathematical inclination and motivation. Emphasis is on theory and hard problems. (SP)

113. Introduction to Abstract Algebra. (4) Three hours of lecture per week; at the discretion of the instructor, an additional two hours of discussion per week. Prerequisites: 54 or a course with equivalent linear algebra content. Sets and relations. The integers, congruences, and the Fundamental Theorem of Arithmetic. Groups and their factor groups. Commutative rings, ideals, and quotient fields. The theory of polynomials: Euclidean algorithm and unique factorizations. The Fundamental Theorem of Algebra. Fields and field extensions. (F,SP) Staff

H113. Introduction to Abstract Algebra. (4) Three hours of lecture per week. Prerequisites: 54 or a course with equivalent linear algebra content. Honors section corresponding to 113. Recommended for students who enjoy mathematics and are good at it. Greater emphasis on theory and challenging problems. (F)

115. Introduction to Number Theory. (4) Three hours of lecture per week. Prerequisites: 53 and 54. Divisibility, congruences, numerical functions, theory of prime numbers, quadratic reciprocity, continued fractions, partitions, quadratic fields, asymptotic distributions, additive problems. (F,SP)

118. Fourier Analysis, Wavelets, and Signal Processing. (3) Three hours of lecture per week. Prerequisites: 53 and 54. Introduction to signal processing with Fourier analysis and related algorithms, theory, algorithms, and applications to one-dimensional signals and multidimensional images. (F,SP)

121A-121B. Mathematical Tools for the Physical Sciences. (4,4) Three hours of lecture per week. Prerequisites: 53 and 54. Functions of a complex variable, analytical systems, autonomous systems, Sturm-Liouville Theory. (F)

125A. Mathematical Logic. (4) Three hours of lecture per week. Prerequisites: 113 or consent of instructor. Sentential and quantificational logic. Formal grammar, semantical interpretation, formal deduction, and their calculi. Applications of mathematical theories. Selected topics from model theory or proof theory. (F,SP)

126. Introduction to Partial Differential Equations. (4) Three hours of lecture per week. Prerequisites: 104. Classification of second order equations, boundary value problems for elliptic and parabolic equations, initial value problems for hyperbolic equations, existence and uniqueness theorems in simple cases, maximum principles, a priori bounds, the Fourier transform. (SP)

127. Mathematical and Computational Methods in Molecular Biology. (3,3) Three hours of lecture per week. Prerequisites: 53, 54, and 55; Statistics 20 recommended. Introduction to mathematical and computational problems arising in the context of molecular biology. Theory and applications of combinatorics, probability, statistics, geometry, and topology to problems ranging from sequence determination to structure analysis. (F,SP)

128. Numerical Analysis. (4) Three hours of lecture per week. Prerequisites: 53, 54, and 55; Statistics 20 recommended. Numerical analysis, error analysis, the structure of computer algorithms. (F,SP)
128B. Numerical Analysis. (4) Three hours of lecture and one hour of discussion per week. At the discretion of the instructor, an additional hour of discussion/computer laboratory per week. Prerequisites: 110 and 128A. Iterative solution of systems of nonlinear equations, evaluation of eigenvalues and eigenvectors of matrices, applications to simple partial differential equations. Practice on the computer. (F,SP)

Upper Division Courses

130. The Classical Geometries. (4) Three hours of lecture per week. Prerequisites: 110 and 113. A critical examination of Euclidean and other geometries, ruler and compass constructions; connections with Galois theory; Hilbert’s axioms for geometry, theory of areas, introduction of coordinates, non-Euclidean geometry, regular solids, projective geometry. (F,SP)

135. Introduction to the Theory of Sets. (4) Three hours of lecture per week. Prerequisites: 113 and 104. Set-theoretical paradoxes and means of avoiding them. Sets, relations, functions, order and well-order. Proof by transfinite induction and definitions by transfinite recursion. Cardinal and ordinal numbers and their arithmetic. Construction of the real numbers. Axiom of choice and its consequences. (F,SP)

140. Metric Differential Geometry. (4) Three hours of lecture per week. Prerequisites: 104. Frenet formulas, isoperimetric inequality, local theory of surfaces in Euclidean space and general surfaces. Gaussian and mean curvature, isometries, geodesics, parallelism, the Gauss-Bonnet-Von Dyck Theorem. (F,SP)

141. Elementary Differential Topology. (4) Three hours of lecture per week. Prerequisites: 104 or equivalent and linear algebra. Manifolds in n-dimensional Euclidean space and smooth maps, Sard’s Theorem, classification of compact one-manifolds, transversality and intersection modulo 2. (F,SP)

142. Elementary Algebraic Topology. (4) Three hours of lecture per week. Prerequisites: 104 and 113. The topology of one and two dimensional spaces: manifolds and triangulation, classification of surfaces, Euler characteristic, fundamental groups, plus further topics at the discretion of the instructor. (F,SP)

Mathematics of the Secondary School Curriculum I. (4) Three hours of lecture and zero to one hour of discussion per week. Prerequisites: 1A-1B, 53, or equivalent. Theory of rational numbers based on the number line, the Euclidean algorithm and fractions in lowest terms. The concepts of congruence and similarity, equivalence on a line, functions, and quadratic functions. (Equipped with computer lab.) (F,SP)

Mathematics of the Secondary School Curriculum II. (4) Three hours of lecture and zero to one hour of discussion per week. Prerequisites: 151; 54, 113, or equivalent. Complex numbers and Fundamentals of Algebra. Roots and factoring of polynomials, Euclidean geometry and axiomatic systems, basic trigonometry. (F,SP)

Mathematics of the Secondary School Curriculum III. (4) Three hours of lecture and zero to one hour of discussion per week. Prerequisites: 151, 152. The real line, bounds, limit and decimal expansion of a number, differentiation and integration, Fundamental Theorem of Calculus, characterizations of sine, cosine, exp, and log. (F,SP)

History of Mathematics. (4) Three hours of lecture per week. Prerequisites: 53, 54, and 113. History of algebra, geometry, analytic geometry, and calculus from ancient times through the seventeenth century and selected topics from more recent mathematical history. (SP)

170. Mathematical Methods for Optimization. (4) Three hours of lecture per week. Prerequisites: 53 and 54. Linear programming and a selection of topics from among the following: matrix games, integer programming, semidefinite programming, nonlinear programming, convex analysis and geometry, polyhedral geometry, the calculus of variations, and control theory. (F,SP)

172. Combinatorics. (4) Three hours of lecture per week. Prerequisites: 55. Basic combinatorial principles, graphs, partially ordered sets, generating functions, recursive methods, combinatory permutations and partitions, designs and codes. Additional topics at the discretion of the instructor. (F,SP)

185. Introduction to Complex Analysis. (4) Three hours of lecture per week; at the discretion of the instructor, an additional two hours of discussion per week. Prerequisites: 104. Analytic functions of a complex variable, Cauchy’s integral theorem, power series, Laurent series, singularities of analytic functions, the residue theorem with application to definite integrals. Some additional topics such as conformal mapping. (F,SP)

185H. Introduction to Complex Analysis. (4) Three hours of lecture per week. Prerequisites: 104. Honors section corresponding to Math 185 for exceptional students with strong mathematical inclination and motivation. Emphasis is on rigor, depth, and hard problems. (SP)

187. Senior Level Analysis. (4) Three hours of lecture per week. Prerequisites: 104, 113, and 185. Course gives a comprehensive view of analysis. Emphasis is on the interrelations among topics taken from different areas. Harmonic analysis and representation element, elementary functional analysis and special functions. (F)

189. Mathematical Methods in Classical and Quantum Mechanics. (4) Course may be repeated for credit. Three hours of lecture per week. Prerequisites: 104, 110, 2 semesters lower division Physics. Topics in mechanics presented from a mathematical viewpoint: e.g., Hamiltonian mechanics and symplectic geometry, differential equations for fluids, spectral theory in quantum mechanics, probability theory and statistical mechanics. See department bulletins for specific topics each semester course is offered. (SP)

191. Experimental Courses in Mathematics. (1-4) Course may be repeated for credit. Hours to be arranged. Prerequisites: Consent of instructor. The topics to be covered and the method of instruction to be used will be announced at the beginning of each semester that such courses are offered. See departmental bulletins. (F,SP)

195. Special Topics in Mathematics. (4) Course may be repeated for credit. Hours to be arranged. Prerequisites: Consent of instructor. Lectures on special topics, which will be announced at the beginning of each semester that the course is offered. (SP)

196. Honors Thesis. (4) Course may be repeated for credit. Hours to be arranged. Prerequisites: Admission to the Honors Program, overall GPA of 3.3 and a GPA of 3.5 in the major. Independent study of an advanced topic leading to an honors thesis. (F,SP)

197. Field Study. (1-4) Three hours of work per week per unit. Prerequisites: Upper division standing. Written proposal signed by faculty sponsor and approved by department chair. For Math/Applied Math majors. Supervised experience relevant to specific aspects of their mathematical emphasis of study in off-campus organizations, or research. Regular individual meetings with faculty sponsor and an additional one hour of discussion per week. Credit will be awarded on the basis of three hours/week/unit. (F,SP)

198. Directed Group Study. (1-4) Group study. Must be taken on a pass/failed basis. Prerequisites: Must have completed 60 units and be in good standing. Topics will vary with instructor. (F,SP)

199. Supervised Independent Study and Research. (1-4) Hours to be arranged. Must be taken on a pass/failed basis. Prerequisites: The standard college regulations for all 199 courses. (F,SP)

Graduate Courses


205. Theory of Functions of a Complex Variable. (4) Three hours of lecture per week. Prerequisites: 185. Normal families. Riemann Mapping Theorem. Picard’s theorem and related theorems. Multiple-valued analytic functions and Riemann surfaces. Topics selected at the discretion of the instructor may include: harmonic functions, elliptic and algebraic functions, boundary behavior of analytic functions and HP spaces, the Riemann zeta functions, prime number theorem.


212. Several Complex Variables. (4) Three hours of lecture per week. Prerequisites: 185 and 202A-202B or their equivalents. Power series developments, do-
mains of holomorphy, Hartogs' phenomenon, pseudo convexity and plurisubharmonicity. The remainder of the course may treat either sheaf cohomology and Stein manifolds, or the theory of analytic subvarieties and spaces.


215A-215B. Algebraic Topology. (4;4) Three hours of lecture per week. Prerequisites: 113 and point-set topology (e.g., 202A). Fundamental group and covering spaces, simplicial and singular homology theory with applications, cohomology theory, duality theorem. Homotopy theory, fibrations, relations between homotopy and homology, obstruction theory, and topics from spectral sequences, cohomology operations, and characteristic classes. Sequence begins fall.

C218A. Probability Theory. (4) Three hours of lecture per week. Some knowledge of real analysis and metric spaces, including compactness, Riemann integral. Knowledge of Lebesgue integral and/or elementary probability is not essential, given otherwise strong mathematical background. Measure theory concepts needed for probability, Expectation, distributions. Laws of large numbers and central limit theorems for independent variables. Characteristic function methods. Conditional expectations; martingales and theory convergence. Markov chains. Stationary processes. Also listed as Statistics C205A. Staff

C218B. Probability Theory. (4) Three hours of lecture per week. Some knowledge of real analysis and metric spaces, including compactness, Riemann integral. Knowledge of Lebesgue integral and/or elementary probability is not essential, given otherwise strong mathematical background. Measure theory concepts needed for probability, Expectation, distributions. Laws of large numbers and central limit theorems for independent variables. Characteristic function methods. Conditional expectations; martingales and theory convergence. Markov chains. Stationary processes. Also listed as Statistics C205B. Staff

219. Ordinary Differential Equations and Flows. (4) Three hours of lecture per week. Prerequisites: 214. Ordinary differential equations. Diffeomorphisms and flows on manifolds. Stable manifolds, generic properties, structural stability. Special topics selected by the instructor. (F)

220. Methods of Applied Mathematics. (4) Three hours of lecture per week. Variational principles; optimization; control; dynamical systems; stochastic ordinary differential equations; estimation; data analysis. (F, SP)

221. Advanced Matrix Computations. (4) Three hours of lecture per week. Prerequisites: Consent of instructor. Direct solution of linear systems, including large sparse systems: error bounds, iteration methods, least square approximation, eigenvalues and eigenvectors of matrices, nonlinear equations, and minimization of functions. (F, SP)

222A-222B. Partial Differential Equations. (4;4) Three hours of lecture per week. Prerequisites: 105 or 205A. Fourier series, Laplace transforms, basic properties of solutions of initial and boundary value problems for hyperbolic, parabolic, and elliptic partial differential equations, with emphasis on non-linear equations. More general types of equations and systems of equations. (F, SP)


225A-225B. Metamathematics. (4;4) Three hours of lecture per week. Prerequisites: 125B and 135. Metamathematics of predicate logic. Completeness and compactness; Interpretation and definability of models, Metamathematics of number theory, recursive functions, applications to truth and provability. Undecidable theories. Sequence begins fall.

227A. Theory of Recursive Functions. (4) Three hours of lecture per week. Prerequisites: 225B. Recursive functions, recursive sets, recursive relations, recursive ordinals; characterizations, significance, and classification. Relativization, degrees of unsolvability. The recursion constructive ordinals, the hyperarithmetical and analytical hierarchies. Recursive objects of higher type. Sequence begins fall.


240. Riemannian Geometry. (4) Three hours of lecture per week. Prerequisites: 214, Riemannian metric and Levi-Civita connection, geodesics and completeness, curvature, first and second variations of arc length. Additional topics such as Myer's, Synge, and Cartan-Hadamard theorem, the second fundamental form, convexity and rigidity of hypersurfaces in Euclidean space, homogeneous manifolds, the Gauss-Bonnet theorem, and characteristic classes. (SP)

241. Complex Manifolds. (4) Three hours of lecture per week. Prerequisites: 214 and 215A. Riemann surfaces, divisors and line bundles on Riemann surfaces, sheaves and the Dolbeault theorem on Riemann surfaces, the classical Riemann-Roch theorem, the Abel-Jacobi Complex manifolds, Kahler metrics. Summary of Hodge theory, groups of line bundles, additional topics such as Kodaira's vanishing theorem, Lefschetz hyperplane theorem. (SP)

242. Symplectic Geometry. (4) Three hours of lecture per week. Prerequisites: 214 and 215B. Symplectic manifolds, Darboux theorem, cotangent bundles, variational problems and Lengendre transform, hamiltonian systems, lagrangian submanifolds, preson brackets, symplectic groups and momentum mappings, coadjoint orbits, Kahler manifolds. (F, SP)

245A. General Theory of Algebraic Structures. (4) Three hours of lecture per week. Prerequisites: 113 and 135. Structures defined by operations and/or relations, and their homomorphisms. Classes of structures determined by identities. Constructions such as free objects, objects presented by generators and relations, ultraproducts, direct limits. Applications of general results. Course may emphasize study of congruence- and subalgebra-lattices, or category-theory and adjoint functors, or other aspects.

249. Algebraic Combinatorics. (4) Three hours of lecture per week. Prerequisites: 250A or consent of instructor. (i) Enumeration, generating functions and exponential structures, (ii) Posets and lattices, (iii) Geometric combinatorics, (iv) Symmetric functions, (v) Young tableaux, and connections with representation theory. Further study of applications of the core material and/or additional topics, chosen by instructor. (F, SP) Staff

250A. Groups, Rings, and Fields. (4) Three hours of lecture per week. Prerequisites: 114 or consent of instructor. Groups, group theory, group theory, the Jordan-Holderm theorems and the Sylow theorems. Basic theory of rings and ideals. Unique factorization domains and principal ideal domains. Modules. Chain conditions. Fields, including fundamental theorem of Galois theory, theory of finite fields, and transcendence degree. (F)

250B. Multilinear Algebra and Further Topics. (4) Three hours of lecture per week. Prerequisites: 250A. Tensor algebras and exterior algebras, with application to linear transformations. Commutative ideal theory, localization. Elementary specialization and valuation theory. Related topics in algebra. (SP)

251. Ring Theory. (4) Three hours of lecture per week. Prerequisites: 250A. Topics such as: Noetherian rings, rings with descending chain condition, theory of the radical, homological methods.

252. Representation Theory. (4) Three hours of lecture per week. Prerequisites: 250A. Structure of finite dimensional algebras, representations of finite groups, the classical linear groups. (F)

253. Homological Algebra. (4) Three hours of lecture per week. Prerequisites: 250A. Modules over a ring, homomorphisms and tensor products of modules, functors and derived functors, homological dimension of rings and modules.

254A-254B. Number Theory. (4;4) 254B may be repeated with consent of instructor. Three hours of lecture per week. Prerequisites: 254A for 254A; 254A for 254B. Valuations, units, and ideals in number fields, ramification theory, quadratic and cyclotomic fields, class field theory, finite class field theory, L-series, distribution of primes, modular forms, quadratic forms, diophantine equations, P-adic analysis, and transcendental numbers. Sequence begins fall.

254B-254C. Number Theory. (4;4) Three hours of lecture per week. Prerequisites: 254A-254B. Valuations, units, and ideals in number fields, ramification theory, quadratic and cyclotomic fields, topics from class field theory, zeta-functions and L-series, distribution of primes, modular forms, quadratic forms, diophantine equations, P-adic analysis, and transcendental numbers. Sequence begins fall.

255. Algebraic Curves. (4) Three hours of lecture per week. Prerequisites: 250A-250B or consent of instructor. Elliptic curves. Algebraic curves, Riemann surfaces, and function fields. Singularities. Riemann-Roch theorem, Hurwitz's theorem, embeddings and the canonical curve. Zeta functions of curves over finite fields. Additional topics such as Jacobians or the Riemann hypothesis. (F, SP)

256A-256B. Algebraic Geometry. (4;4) Three hours of lecture per week. Prerequisites: 250A, 254A, 254B. Valuations, units, and ideals in number fields, ramification theory, quadratic and cyclotomic fields, topics from class field theory, zeta-functions and L-series, distribution of primes, modular forms, quadratic forms, diophantine equations, P-adic analysis, and transcendental numbers. Sequence begins fall.

257. Group Theory. (4) Three hours of lecture per week. Prerequisites: 250A. Topics such as: generators and relations, infinite discrete groups, groups of Lie type, permutation groups, character theory, solvable groups, simple groups, transfer and cohomological methods.

258. Classical Harmonic Analysis. (4) Three hours of lecture per week. Prerequisites: 206 or a basic knowledge of real, complex, and linear analysis. Basic properties of Fourier series and summation, conjugate functions, Hardy spaces, boundary behavior of analytic and harmonic functions. Additional topics at the discretion of the instructor.
260. Abstract Harmonic Analysis. (4) Three hours of lecture per week. Prerequisites: 206. Topological groups, Haar measure, Pontrjagin duality, and structure theory of abelian groups. Peter-Weyl theorem for compact groups. Further topics may include finer study of harmonic analysis on commutative groups, or else head in the direction of group representations for noncommutative locally compact groups.

261A-261B. Lie Groups, (4,-4) Three hours of lecture per week. Prerequisites: 214, Lie groups and Lie algebras, fundamental theorems of Lie, general structure theory; compact, nilpotent, solvable, semi-simple Lie groups; classification theory and representation theory of semi-simple Lie algebras and Lie groups, further topics such as symmetric spaces, Lie transformation groups, etc., if time permits. In view of its simplicity and its wide range of applications, it is preferable to cover compact Lie groups and their representations in 261A.

Sequence begins fall.

265. Differential Topology. (4) Three hours of lecture per week. Prerequisites: 214 plus 215A or some familiarity with algebraic topology. Approximations, de- grees of maps, vector bundles, tubular neighborhoods. Introduction to Morse theory, handlebodies, cobordism, surgery. Additional topics selected by instructor from: characteristic classes, classification of manifolds, immersions, isotopy classes of maps, etc.

270. Hot Topics in Course Mathematics. (2) Course may be repeated for credit as topic varies. One and one-half hours of lecture per week. Must be taken on a satisfactory/unsatisfactory basis. This course will give introductions to current research developments. Every semester we will pick a different topic and go through the relevant literature. Each student will be expected to give one presentation. (F,SP) Staff

271. Topics in Foundations. (4) Course may be repeated for credit. Three hours of lecture per week. Prerequisites: Consent of instructor. Advanced topics chosen by the instructor. The content of this course changes, as in the case of seminars.

273. Topics in Numerical Analysis. Three hours of lecture per week. Prerequisites: Consent of instructor. Advanced topics chosen by the instructor. The content of this course changes, as in the case of seminars.

274. Topics in Algebra. (4) Course may be repeated for credit. Three hours of lecture per week. Prerequisites: Consent of instructor. Advanced topics chosen by the instructor. The content of this course changes, as in the case of seminars.

275. Topics in Applied Mathematics. (4) Course may be repeated for credit. Three hours of lecture per week. Prerequisites: Consent of instructor. Advanced topics chosen by the instructor. The content of this course changes, as in the case of seminars.

276. Topics in Topology. (4) Course may be repeated for credit. Three hours of lecture per week. Prerequisites: Consent of instructor. Advanced topics chosen by the instructor. The content of this course changes, as in the case of seminars.

277. Topics in Differential Geometry. (4) Course may be repeated for credit. Three hours of lecture per week. Prerequisites: Consent of instructor. Advanced topics chosen by the instructor. The content of this course changes, as in the case of seminars.

278. Topics in Analysis. (4) Course may be repeated for credit. Three hours of lecture per week. Prerequisites: Consent of instructor. Advanced topics chosen by the instructor. The content of this course changes, as in the case of seminars.

279. Topics in Partial Differential Equations. (4) Course may be repeated for credit. Three hours of lecture per week. Prerequisites: Consent of instructor. Advanced topics chosen by the instructor. The content of this course changes, as in the case of seminars.

280. Seminars. (1-6) Course may be repeated for credit. Hours to be arranged. Topics in foundations of mathematics, theory of numbers, numerical calculations, analysis, geometry, topology, algebra, and their applications, by means of lectures and informal conferences; work based largely on original memoirs. (F,SP)

290C. Topics in Fluid Mechanics. (1,2) Course may be repeated for credit. One hour of seminar per week. Must be taken on a satisfactory/unsatisfactory basis. Prerequisites: Consent of instructor. Lectures on special topics which will be announced at the beginning of each semester that the course is offered. Topics may include transport and mixing, geophysical fluid flows, dyanmics, oceanography, free surface flows, non-Newtonian fluid mechanics, among other possibilities. Also listed as Environ Sci, Policy, and Management C291, Physics C2920, Chemical Engineering C295M, Nuclear Engineering C290F, Civil and Environmental Engineering C290K, Mechanical Engineering C298A, and Bioengineering C290C. (F,SP) Staff

295. Individual Research. (1-12) Course may be repeated for credit. Hours to be arranged. Sections 1-30 to be graded on a satisfactory/unsatisfactory basis. Sections 31-60 to be graded on a satisfactory/unsatisfactory basis. Intended for candidates for the Ph.D. degree. (F,SP)

299. Reading Course for Graduate Students. (1-6) Course may be repeated for credit. Hours to be arranged. Sections 1-30 to be graded on a satisfactory/unsatisfactory basis. Sections 31-60 to be graded on a satisfactory/unsatisfactory basis. Prerequisites: For candidates for master’s degree. Individual study for the comprehensive or language requirements in consultation with the field adviser. (F,SP)

300. Teaching Workshop. (3) Two hours of lecture per week, plus class visits. Must be taken on a satisfactory/unsatisfactory basis. Mandatory for all graduate student instructors teaching for the first time in the department. The course is practice teaching, alternatives to standard classroom methods, guided group and self-analysis of videotapes, reciprocal class room visits, and an individual project. (F,SP)

301. Undergraduate Mathematics Instruction. (1-2) Course may be repeated once per credit. Three hours of seminar and four hours of tutorial per week. Must be taken on a passed/not passed basis. Prerequisites: Permission of SLC instructor, as well as sophomore standing and at least a B average in two semesters of calculus or enrollment in the Student Learning Center. May be taken for one unit by special permission of instructor. Attendance at the Student Learning Center or for the Professional Development Program. (F,SP)

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Mechanical Engineering

(College of Engineering)

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Chair: Albert Pisano, Ph.D.

Professors

Alicia M. Agogino (The Roscoe and Elizabeth Hughes Chair in Mechanical Engineering), Ph.D. Stanford University. Dynamic and expert systems.

Stanley A. Berger (The Montford G. Cook Chair in the College of Engineering), Ph.D. Brown University. Fluid mechanics.

David A. Boggs (The William S. Floyd J. Distinguished Professor in Engineering), Ph.D. Brown University. Fluid dynamics.

F. Carey, Ph.D. State University of New York at Buffalo. Transport in multiphase systems, thermophysics of phase-change processes.

James Casey, Ph.D. University of California, Berkeley. Continuum mechanics.

Juh-Yuan Chen, Ph.D. Cornell University. Turbine combustion, chemical kinetics, numerical simulation.

Eric Chan, Ph.D. University of California, Berkeley. Composite materials.


David A. Dornfeld (Associate Dean, Interdisciplinary Studies, and The Will C. Hall Family Chair in Engineering), Ph.D. University of Wisconsin. Manufacturing processes, robotics.

Carlos Fernandez-Pello (Associate Dean, Graduate Division), Ph.D. University of California at San Diego. Computational dynamics, heavy and conventional vehicles.

Michael Y. Frenklach, Ph.D. Hebrew University. Chemical kinetics, combustion chemistry, chemical vapor deposition.

Ralph Greif, Ph.D. Harvard University. Heat and mass transfer.


J. Karl Hedrick (The James Marshall Wells Chair in Mechanical Engineering), Ph.D. Stanford University. Control systems, transportation systems.

Roberto Horowitz, Ph.D. University of California, Berkeley. Automatic control systems.

George C. Johnson (Associate Dean, Special Programs), Ph.D. Stanford University. Ultrasonic stress evaluation.

Howard Kausz, Ph.D. University of California at San Diego. Control systems, robotics.

Tony Papadopoulos, Ph.D. Cornell University. Tissue engineering and biomechanics.

Kytayal Komolopulos, Ph.D. Massachusetts Institute of Technology. Tribology, contact mechanics, mechanical behavior of materials.

Jean Leibmann, Ph.D.

Dorian Liepmann, Ph.D. University of California, San Diego. Fluid mechanics.

Richard Liepmann, Ph.D. University of California, San Diego. Computational fluid dynamics.

†Kameshwar Poolla, Ph.D. University of Florida at Gainesville. Dynamic systems, automatic controls.

†Oliver M. O'Reilly, Ph.D. Cornell University. Nonlinear dynamics with applications to continuum mechanics.

Andrew Packard, Ph.D. University of California, Berkeley.

Automatic control systems, mechanical systems.

Panayiotis Papadopoulos (Vice Chair, Instruction), Ph.D. University of California, Berkeley. Computer science.

†Kameshwar Poolla, Ph.D. University of California, Berkeley. Computational mechanics, solid mechanics.

†Oliver M. O'Reilly, Ph.D. Cornell University. Nonlinear dynamics with applications to continuum mechanics.


Juh-Yuan Chen, Ph.D. Cornell University. Turbine combustion, chemical kinetics, numerical simulation.

Eric Chan, Ph.D. University of California, Berkeley. Composite materials.

John F. Denker, Ph.D. University of California, San Diego. Computational fluid dynamics.

†Kameshwar Poolla, Ph.D. University of Florida at Gainesville. Dynamic systems, automatic controls.

Liss A. Pratt (Associate Dean, Virtual Learning and Outreach Education, College of Engineering), Ph.D. Brown University. Tissue biomechanics, biomaterial science.

Boris Rubinsky (The Arnold and Barbara Silverman Distinguished Professor in Biomechanics), Ph.D. Massachusetts Institute of Technology. Heat, mass transfer, cryopreservation.

Omer Savas, Ph.D. California Institute of Technology. Aeronautics, boundary layers, combustion, rotating flows, turbulence.

David J. Stieglitz, Ph.D. Brown University. Continuum mechanics, solid mechanics, shell theory.

Edward L. Waddell, Ph.D. California Institute of Technology. Tribology, contact mechanics, mechanical behavior of materials.

John F. Denker, Ph.D. University of California, San Diego. Computational fluid dynamics.

†Kameshwar Poolla, Ph.D. University of Florida at Gainesville. Dynamic systems, automatic controls.

Yoram Israelevitz, Ph.D. University of California, Berkeley. Nanoscale thermal and biomolecular engineering, microsystems.

Alaa Mansour, Ph.D. University of California, Berkeley. Structural reliability and safety, probabilistic dynamics of marine structures, development of design criteria.

Philip Marcus, Ph.D. Princeton University. Computer aided design, design optimization.

John F. Denker, Ph.D. University of California, San Diego. Computational fluid dynamics.

†Kameshwar Poolla, Ph.D. University of Florida at Gainesville. Dynamic systems, automatic controls.

Liss A. Pratt (Associate Dean, Virtual Learning and Outreach Education, College of Engineering), Ph.D. Brown University. Tissue biomechanics, biomaterial science.

Boris Rubinsky (The Arnold and Barbara Silverman Distinguished Professor in Biomechanics), Ph.D. Massachusetts Institute of Technology. Heat, mass transfer, cryopreservation.
Benson Tongue, Ph.D. Princeton University. Chaotic oscillations in dynamic systems
Paul K. Wright (Chief Scientist, CITRIS, College of Engineering, and The A. Martin Berlin Professor of Mechanical Engineering), Ph.D. University of Birmingham. Manufacturing processes, automation
Ronald W. Yeung, Ph.D. University of California, Berkeley. Numerical modeling, surface waves, ocean space systems
Xiang Zhang, Ph.D. University of California, Berkeley. Nanofabrication and processing in mechanical engineering
Cyri P. Atkinson, M.S.M.E. (Emeritus)
*David M. Austander, Sc.D. (Emeritus)
Gilles M. Corcos, Ph.D. (Emeritus)
Iain Finniss, D.Sc., Sc.D. (The Fink Professor Emeritus)
Joseph E. Fike, M.S. (Emeritus)
Frank E. Hauser, Ph.D. (Emeritus)
Maurice Hatt, Ph.D. (Emeritus)
Cheh S. Hsu, Ph.D. (Emeritus)
Franklin C. Hurlbut, Ph.D. (Emeritus)
Clayton D. Mote Jr., Ph.D. (Emeritus)
Frederick S. Sherman, Ph.D. (Emeritus)
Samuel A. Schaaf, Ph.D. (Emeritus)
Robert F. Sawyer, Ph.D. (Emeritus)
Antoni K. Oppenheim, Ph.D, D.Sc. (Emeritus)
*Professor of the Graduate School
†Clayton D. Mote Jr., Ph.D. (The FANUC Professor of Engineering)
‡Professor Emeritus
§Director, CITRIS, College of Engineering
*Dean, College of Engineering
†Chief Scientist, CITRIS, College of Engineering, and The A. Martin Berlin Professor of Mechanical Engineering
‡Professor Emeritus
§Director, CITRIS, College of Engineering

Overview
Mechanical engineers contribute to society by solving problems in transportation, energy, the environment, and human health. The mechanical engineer needs a thorough preparation in mathematics, physics, chemistry, manufacturing processes, properties of materials, mechanics, fluid mechanics, thermodynamics, as well as intensive design and laboratory experience. The program of study includes basic subjects common to all engineering fields, fundamental subjects important to all mechanical engineers and specialization in one or more phases of mechanical engineering.

The undergraduate program begins at the freshman level with study in the humanities, mathematics, physical sciences, and the foundation design course, Engineering 28. In subsequent years students learn to use engineering science concepts as tools for systems analysis and design. The design and laboratory experience is a major component of the senior year. Students have the opportunity to develop a broad hands-on understanding of the design process involved in significant engineering systems. Undergraduate specialization is provided in the choice of technical electives which may be selected from the subject areas of applied mechanics, automatic controls, computer-aided engineering, manufacturing processes, mechanical design, ocean engineering, nuclear engineering, thermodynamics, biomedical, and environmental engineering.

Because of the widening range of technical problems and the diversified nature of specialization available in the undergraduate curriculum, qualified students should consider graduate study to expand their scientific and technological capability. Further details on undergraduate and graduate fields of emphasis in mechanical engineering are available in the Announcement of the College of Engineering. Please visit the department web site at www.me.berkeley.edu for information detailing the undergraduate and graduate program.

The B.S. program is accredited in mechanical engineering by the Engineering Accreditation Commission of the Accreditation Board for Engineering and Technology (ABET). Suite 1050, Baltimore, MD 21202-4012. Telephone: (410) 347-7700.

Curriculum for the Bachelor's Degree
A total of 120 units is required, including:

Lower Division. Mathematics 1A-1B, 53 and 54; Chemistry 1A; Physics 7A-7B-7C (Chemistry 1B or Biology 1A may be taken for Physics 7C); Engineering 77, 28, 36, 45.

Upper Division. Mechanical Engineering 102, 104, 105 or C105B, 106, 107A, 107B, 109, C124; Engineering 190; Electrical Engineering and Computer Sciences 100; Civil Engineering 130.

Electives. The remaining 120 units consist of electives, including the following:

(1) Humanities/Social Studies Electives. These include six courses of at least 3 units each in humanities and social studies selected from an approved list. Two of these courses must fulfill the College of Engineering Reading and Composition requirement. Refer to www.coe.berkeley.edu/current_students/hssreq.pdf for details or go to 308 McLaughlin Hall for a handout.

(2) The 12-unit technical elective requirement. Of the 12-unit technical electives, at least 9 must be in upper-division elective mechanical engineering courses. Of these nine, 3 units must be in an elective course selected from the following list:

Eng 128, Advanced Engineering Design Graphics
Mec Eng 101, High Mix/Low Volume Manufacturing
Mec Eng 110, Mechanical Engineering Project Engineering
Mec Eng 119, Introduction to MEMS
Mec Eng 128, Computer-Aided Mechanical Design
Mec Eng 130, Design of Planar Machinery
Mec Eng 135, Design of Microprocessor-Based Mechanical Systems
Mec Eng 142, Heating, Air Conditioning, and Refrigeration
Mec Eng 145, Computer-Aided Thermal Design
Mec Eng 165, Ocean-Environment Mechanics

Students can receive up to 3 units of technical elective credit for work on a research project in Mec Eng H194, Honors Undergraduate Research. Any upper division course taught by mechanical engineering faculty may be used as part of the 9 units of upper-division mechanical engineering courses. The other technical elective units can be chosen from courses in engineering, physical science, mathematics, or statistics. Engineering courses that cannot be used for the ME technical elective units are: Engineering 24, 39, 92, 111, 115, 193, and 198.

Physical science is defined to include physics, chemistry, biochemistry, chemical engineering, and the biological sciences.

No more than one lower-division course taken from the Approved List of Lower-Division Technical Electives can be used to satisfy part of the technical elective requirement. See end of the next section, Options Electives, for the approved list.

Options Electives
Upper-Division Technical Electives. The following groups of electives are presented to aid under-graduates in focusing their choices on specific professional goals. Each group contains more technical elective courses than can be taken within the standard allowance. (For requirements see course notes under Sample Programs in the Announcement of the College of Engineering.) Of the four technical electives required in the ME program, three must be upper-division ME electives. The electives selected need not be from any single group.

Controls. Mechanical Engineering 132, 133, 134, 135, 175; Electrical Engineering and Computer Sciences 120, 128; Engineering 119, 177.

Biomechanical Engineering. Biology 1A; Bioengineering 153, 210, 212, 213, 214, 290A; Electrical Engineering and Computer Sciences 145A, 145B, 145L, 145M, 146; Mechanical Engineering 117, 127, 133, 134, 142, 167; Integrative Biology 131, 132; Molecular and Cell Biology 22, 120, 130, 173, 213; Materials Science 118.

Combustion. Chemical Engineering 140, 141, 142; Civil Engineering 111, 168; Engineering 117, 150, 160; Materials Science 148; Mechanical Engineering 140, 151.


Environmental Engineering. Architecture 100A, 100B, 140; Engineering 191; Mechanical Engineering 110, 140, 152, 165, 173; Civil Engineering 104N, 111, 117, 173, 176; Nuclear Engineering 162; Geology 14, 143.

Fluid Mechanics and Aeronautics. Engineering 117; Mechanical Engineering 133, 151, 163, 165, 176, 175, 185; Civil Engineering 131.


Heat and Mass Transfer. Chemical Engineering 150B, 171; Engineering 117; Mechanical Engineering 140, 142, 145, 151.


Mechatronics. Electrical Engineering 104; Engineering 66, 166; Mechanical Engineering 101, 128, 130, 132, 133, 134, 135.

Nuclear Engineering. Nuclear Engineering 101, 102, 120, 150, 161; Mechanical Engineering 134, 151, 173; Physics 137A; Mathematics 120A, 120B.


Theoretical and Applied Mechanics. Engineering 117; Mechanical Engineering 127, 133, 163, 165, 170, 173, 175, C180, 185; Mathematics 104.

Lower-Division Technical Electives. (Only one course may be used from the following list to meet the 12-unit technical elective requirement, and it must be taken for a letter grade.) Astronomy 7; Biology 1A, 1B; Chemistry 1B, 1C; Civil Engineering 70; Molecular and Cell Biology 11, 32; Statistics 20; or any lower-division technical course required by another engineering major.

R prefix=course satisfies R&D requirement
AC suffix=course satisfies American Cultures requirement
B prefix=language course for business majors
C prefix=professional course
H prefix=honors course
Mechanical Engineering Minor

The department offers a minor in mechanical engineering that is open to all students not majoring in ME who have a necessary prerequisite for the minor requirements. Information is available at www.me.berkeley.edu/new/undergrad/current.html.

Graduate Programs

Both master’s and doctoral programs are available. The student may choose either a scientific emphasis in particular areas or integrated studies directed to professional objectives. Master of Science and Ph.D. degrees are available in the following areas: (1) controls and dynamics, (2) design, (3) fluids, (4) mechanics, (5) materials, and (6) thermal sciences. Specialization is also offered in the following focus areas: (1) bioengineering, (2) manufacturing, (3) micro-electromechanical systems (MEMS) and nanoelectromechanical, (4) mechanical, (5) energy and environment, and (6) ocean engineering. Details on various aspects of graduate studies are available at www.me.berkeley.edu and in the Announcement of the College of Engineering.

Note: In addition to the courses listed below, the Department of Mechanical Engineering offers the following courses, found in the Engineering section of this catalog: 28, Graphic Communication in Engineering; 117, Methods of Engineering Analysis; 128, Advanced Engineering Design Graphics; 191, Engineering Ethics; 193, California Engineer Staff; 230A, Engineering Analysis; 230B, Engineering Analysis; 231, Mathematical Methods in Engineering; 266A, Finite Difference Methods for Fluid Dynamics; 266B, Spectral Methods for Fluid Dynamics.

Lower Division Courses

24. Freshman Seminars. (1) Course may be repeated for credit as topic varies. One hour of seminar per week. Sections 1-4 to be graded on a letter-grade basis. Sections 5-8 to be graded on a passed/not passed basis. The Berkeley Seminar Program has been designed to provide new students with the opportunity to explore an intellectual topic with a faculty member in a small seminar setting. Berkeley Seminars are offered in all campus departments, and topics vary from department to department and semester to semester. (F,SP) Staff

40. Thermodynamics. (3) Students will receive no credit for 100B after taking 104. Three hours of lecture and one hour of discussion per week. Prerequisites: Chemistry 1A, Engineering 77, Mathematics 1B, and Physics 7B. This course introduces the fundamentals of energy storage, thermophysical properties of liquids and gases, and the basic principles of thermodynamics which are then applied to various areas of engineering related to energy conversion and air conditioning. (F,SP) Carey

84. Sophomore Seminar. (1,2) Course may be repeated for credit as topic varies. One hour of seminar per week per unit for 15 weeks. One and one-half hours of seminar per week per unit for 10 weeks. Two hours of seminar per week per unit for eight weeks. Three hours of seminar per week per unit for six weeks. Sections 1-2 to be graded on a passed/not passed basis. Sections 3-4 to be graded on a letter-grade basis. Prerequisites: At discretion of instructor. Sophomore seminars provide opportunities for in-depth study and interaction among upper-division students enrolled by faculty members in departments all across the campus. Sophomore seminars offer opportunities for close, regular intellectual contact between faculty members and students in the crucial second year. The topics vary from department to department and semester to semester. Enrollmen limited to 15 sophomores. (F,SP) Staff

85. Introduction to Solid Mechanics. (3) Three hours of lecture and one hour of discussion per week. Prerequisites: Mathematics 53 and 54 (co-require); Physics 7A. A review of equilibrium for particles and rigid bodies. Application to truss structures. The concepts of deformation, strain, and stress. Equilibrium equations for a continuum. Elements of the theory of linear elasticity. The states of plane stress and plane strain. Solution of elementary elasticity problems (beam bending, torsion of circular bars). Euler buckling in elastic beams. (F,SP) Papadopoulos

C85. Introduction to Solid Mechanics. (3) Three hours of lecture and one hour of discussion per week. Prerequisites: Mathematics 53 and 54 (co-require); Physics 7A. A review of equilibrium for particles and rigid bodies. Application to truss structures. The concepts of deformation, strain, and stress. Equilibrium equations for a continuum. Elements of the theory of linear elasticity. The states of plane stress and plane strain. Solution of elementary elasticity problems (beam bending, torsion of circular bars). Euler buckling in elastic beams. Also listed as Civil and Environmental Engineering C30. (F,SP) Ammero, Dharan, Li

92. Introduction to Mechanical Engineering. (1) One hour of lecture per week. Must be taken on a passed/not passed basis. An outline of the field of mechanical engineering designed to acquaint the entering student with the profession and the activities of the Department. (F,SP) Staff

98. Supervised Independent Group Studies. (1-4) Course may be repeated for credit. Hours to be arranged. Must be taken on a pass/fail basis. Prerequisites: Consent of instructor. Organized group study on various topics under the sponsorship and direction of a member of the Mechanical Engineering faculty. (F,SP) Staff

Upper Division Courses

101. High Mix/Low Volume Manufacturing. (3) Three hours of lecture per week. Prerequisites: Upper Division student standing in consent of instructor. Fundamentals of high mix/low volume (HMLV) manufacturing systems including manufacturing fundamentals, unit operations and manufacturing line considerations for work in process (WIP), manufacturing lead time (MLT), economics, quality monitoring; HMLV systems fundamentals including just in time (JIT), kanban, buffers and line balancing; class project/course studies for design of competitive manufacturing systems. (F) Dornfeld, McMains

102. Mechanical Engineering Design. (3) Two hours of lecture and three hours of laboratory per week. Prerequisites: C124 and Engineering 28. Formerly 102B. Application of principles of mechanics, materials science, and manufacturing processes to the design of components and complete machines that must meet prescribed functional requirements. Synthesis and analysis of a major machine design project. (F,SP) Kazerouni

104. Engineering Mechanics II. (3) Three hours of lecture and one hour of discussion per week. Prerequisites: Engineering 36, 77, and Mathematics 54. This course is an introduction to the dynamics of particles and rigid bodies. The material, based on a Newtonian formulation of the governing equations, is illustrated with numerous examples ranging from one-dimensional motion of a single particle to planar motions of rigid bodies and systems of rigid bodies. (F,SP) Staff

105. Thermodynamics. (3) Students will receive no credit for 105A after taking 105B. Three hours of lecture and one hour of discussion per week. Prerequisites: Chemistry 1A, Mathematics 53, Physics 7A, and Engineering 77. This course introduces the basic principles of thermodynamics which are then applied to various areas of engineering related to energy conversion and air conditioning. (F,SP) Carey

105B. Thermodynamics and Biothermodynamics. (3) Students will receive no credit for C105B after taking 105. Three hours of lecture and one hour of discussion per week. Prerequisites: Chemistry 1A, Mathematics 53, Physics 7A, and Engineering 77, or equivalents. This course provides an introduction to the principles of thermodynamics and their application to a variety of biological processes and systems. Some coverage of conventional engineering applications is also included. Also listed as Bioengineering C105B. (F,SP) Carey

106. Fluid Mechanics. (3) Three hours of lecture and one hour of discussion per week. Prerequisites: 104. This course introduces the fundamentals and techniques of fluid mechanics related to designing and controlling engineering flows. (F,SP) Staff

107A. Experimentation and Measurement. (3) Three hours of lecture and three hours of laboratory per week. Prerequisites: 104, 105, 106, Electrical Engineering 100, Engineering 190. Co-require 109. Methods and procedures for experimental investigation of mechanical engineering phenomena and systems. Experimental design, measurement systems, data acquisition, and data analysis. Modeling of measurement and experimental systems. (F,SP) Staff

107B. Mechanical Engineering Laboratory. (3) Six hours of laboratory per week. Prerequisites: 104A. Experimental investigation of engineering systems and of phenomena of interest to mechanical engineers. Design and planning of experiments. Analysis of data and reporting of experimental results. (F,SP) Staff

108. Mechanical Behavior of Engineering Materials. (4) Three hours of lecture and one hour of discussion per week. Prerequisites: 85. This course covers elastic and plastic deformation under static and dynamic loads. Failure by yielding, fracture, fatigue, wear, and environmental factors are examined. Topics include engineering materials, structure-property relationships, elastic deformation and multiaxial loading, plastic deformation and yield criteria, dislocation plasticity and strengthening mechanisms, creep, stress corrosion, creep-fatigue, and contact stresses. (F,SP) Komvopoulos

109. Heat Transfer. (3) Three hours of lecture and one hour of discussion per week. Prerequisites: 105 and 106. This course covers transport processes of mass, momentum, and energy from a macroscopic view with emphasis both on understanding why matter behaves as it does and on developing practical problem solving skills. The course is divided into four parts: introduction, conduction, convection, and radiation. (F,SP) Staff

110. Introduction to Product Development. (3) Three hours of lecture per week. Prerequisites: 102B, 107A (which may be taken concurrently). The course provides an experience in preliminary project planning of complex and realistic mechanical engineering systems. Design concepts and techniques are introduced, and the student’s design ability is developed in a design or feasibility study chosen to emphasize ingenuity and provide wide coverage of engineering topics. Innovative systems are preferred. Design optimization and social, economic, and political implications are included. Both individual and group oral presentations are made, and participation in conferences is required. Staff

C117. Structural Aspects of Biomaterials. (4) Three hours of lecture and two hours of laboratory per week. Prerequisites: Biology 1A, Engineering 45, Civil Engineering 130 or Bioengineering 102, and Engineering 190. This course covers the structure and mechanical functions of load-bearing biological tissues. Natural and synthetic load-bearing biomaterials for clinical applications are reviewed. Biocompatibility of biomaterials and host response to structural implants are explored. Quantitative and qualitative treatment of biomechanical issues and constitutive relationships of tissues are covered in order to design biomaterial replacements for structural function. Material selection for load-bearing applications including reconstructive surgery, orthopedics, dentistry, and cardiology are addressed. Mechanical design for longevity including topics of fatigue, wear, and fracture are reviewed. Case studies that examine failures of a variety of load-bearing structures. This course includes a teaching/design laboratory component that involves design analysis of medical devices and outreach teaching to the public community. Several problem-based projects are utilized throughout the semester for design analysis. In addition to the written content, this course involves rigorous technical writing assignments, oral communication and skill development
118. Introduction to Nanotechnology and Nano- science. (3) Three hours of lecture per week. Prereq- uisites: Chemistry 1A and Physics 7B. This course in- troduces students (juniors and seniors) to the field of nanotechnology and nanoscience. The course has two components: (1) Formal lectures. Stu- dents receive a set of formal lectures introducing them to the field of nanotechnology and nanoscience. The ma- terial covered includes nanofabrication technology (how one achieves the nanometer length scale, from “bottom up” to “top down” technologies), the inter- disciplinary nature of nanotechnology and nano- science (including areas of chemistry, material science, physics, and molecular biology), examples of nano- science phenomena (the crossover from bulk to quantum properties), and applications (from integrated circuits, quantum computing, MEMS, and bioengineering). (2) Projects. Students are asked to read and present a variety of current journal papers to the class and lead a discussion on the various works. (F,SP) Lin, Sohn

119. Introduction to MEMS (Microelectromechanical Systems). (3) Three hours of lecture per week. Prerequisites: Electrical Engineering 100, Physics 7B. Fundamentals of microelectromechanical systems in- clude microfabrication, dynamics of microstructures, micromachining, bulk-micromachining, LIGA, and other micromachining processes; fabrication principles of in-tegrated circuit device and their applications for mak- ing micromachines including micro-aspect-ratio microstructures; scaling issues in the micro scale (heat transfer, fluid mechanics and solid mechanics); device design, analy- sis, and mask layout. (F) Staff

122. Processing of Materials in Manufacturing. (3) Three hours of lecture and one hour of discussion per week. Prerequisites: Civil Engineering 130 and Engineering 45, Formerly 102A and Materials Science and En- gineering 113. This course covers elastic and plastic de- formation under static and dynamic loads. Prediction and analysis in mechanical behavior due to yield, fracture, wear, and environmental factors are addressed. De- sign issues pertaining to materials selection for load- bearing applications are discussed. Case studies of engineering materials, structure-property relationships, materials selection for design, mechanical behavior of polymers and design of plastic components, complex states of stress and strain, elastic deformation and multiaxial loading, plastic deformation and yield crite- ria, dislocation plasticity and strengthening mecha- nisms, creep, effective stress concentrations, fatigue, fracture, and ductile stresses. Also listed as Materials Science and Engineering 113, (F,SP) Ritchie

127. Composite Materials—Analysis, Design, Manu- facture. (3) Three hours of lecture per week. Prereq- uisites: Civil Engineering 130 or equivalent course in mechanics of materials: Engineering 36 and 45. Presentation and analysis of structure of high-performance materials (glass, carbon, polymer, ceramic fibers) and matrix materials (polymer, metal, ceramic, and carbon matrices). Specific strength and stiffness of high-per- formance composites. Rule of mixtures. Stress, strain transformation, Failure criteria. Design of composite structures and components. Manu- facturing processes. (F) Dhawan

128. Computer-Aided Mechanical Design. (3) Three hours of lecture and one hour of discussion per week. Prerequisites: 102B, Engineering 28, Civil Engineering 130, and Mathematics 53, 54, or consent of instructor. Introduction to design (not drafting) via computers. Us- ing MATLAB software on X-windows workstations, the student will be introduced to a variety of mechanical design techniques and apply those techniques to the computer design of mechanical components, planar me- chanical elements, linkages, and flexible hinges. These techniques include ad-hoc methods, exhaustive numeration, grid studies, and informal optimizations. (SP) Lin

130. Design of Planar Machinery. (3) Three hours of lecture and one hour of discussion per week. Prereq- uisites: 104. Synthesis, analysis, and design of planar machines. Kinematic structure, graphical, analytical, and numerical analysis and synthesis. Linkages, cams, Cam-driving devices, linkages, gears, trans, and flywheels. (SP) Youssefi


133. Mechanical Vibrations. (3) Three hours of lec- ture per week. Prerequisites: 104. An introduction to the theory of linear oscillatory motion with emphasis on forced vibrations. Transfer functions and state equations. Frequency response and Nyquist stability. Loop shaping. State feedback controller and observer design. Applications to mechanical and electrical systems. (F,SP) Staff

135. Design of Microprocessor-Based Mechanical Systems. (4) Three hours of lecture and three hours of laboratory per week. Prerequisites: Engineering 77. This course provides preparation for the conceptual design and prototyping of mechanical systems that use microprocessors as control machine activities, acquire and analyze data, and interact with operators. The architecture of microprocessors is related to problems in mechanical systems through study of systems, using transfer functions and state equations. Frequency response and Nyquist stability. Loop shaping. State feedback controller and observer design. Applications to mechanical and electrical systems. (F,SP) Staff

137. Advanced Heat Transfer. (3) Three hours of lec- ture per week. Prerequisite: 109. Basic principles of heat transfer and their application. Subject areas include steady-state and transient system analy- ses for conduction, free and forced convection, boili- ng, condensation and thermal radiation. (SP) Staff

163. Engineering Aerodynamics. (3) Three hours of lecture per week. Prerequisites: 106. Introduction to the lift, drag, and moment of two-dimensional airfoils, three-dimensional wings, and the complete airplane. Calculations of the performance and stability of air- planes in subsonic flight. (F) Savas

164. Marine Statics and Structures. (3) Students will not receive credit for 165 after taking C165/Ocean En- gineering 164; 2 units after C165. Three hours of lecture per week. Prerequisites: Civil Engineering 130 or consent of instructor. Formerly C164. Termi- nal definition of statics, topics in structural mechanics. Stability. Use of modern computational tools. (SP) Tongue

140. Combustion Processes. (3) Three hours of lecture and one hour of discussion per week. Prereq- uisites: 105, 106, and 109. 105 and 109 may be taken con- currently. Fundamentals of combustion, flame structure, flame speed, flammability, ignition, stirred re- action, kinetics and nonequilibrium processes, pollutant formation. Application to engines, energy production, and fire safety. (F) Fernandez-Pello

142. Thermal Environmental Control. (3) Three hours of lecture per week. Prerequisites: 105 or equiv- alent; 106, 109 (may be taken concurrently). This course will focus on the study of heat transfer and the transport phenomena associated with a broad spec- trum of thermal control applications. Emphasis will be on application of theoretical concepts to the design of advanced thermal control systems. This course will include enhanced vapor compression heat pumps, gas compression cycles, psychrometrics, cooling towers, decussant cooling, absorption refrigeration, Joule- Thompson cooling, cryogenics, thermoelectric cooling, heat exchangers, advanced insulation concepts. Applications in thermal control of buildings, automobiles, spacecraft, and electronics will be dis- cussed. (F) Staff

146. Energy Conversion Principles. (3) Three hours of lecture and one hour of discussion per week. Prereq- uisites: 105, 106, 109 (which may be taken con- currently), and Engineering 7, or equivalents. This course covers the fundamental principles of energy conversion processes, followed by development of the- oretical and computational tools that can be used to analyze energy conversion processes. The course also includes study of physical phenomena and operational methods to model energy conversion performance character- istics of devices and systems. Performance features, sources of inefficiencies, and optimal design strategies are studied and discussed for a variety of systems that may include conventional combustion based and Rankine power systems, energy systems for space applica- tions, solar, wind, wave, thermoelectric, and geother- mal energy systems. (F,SP) Carey

151. Advanced Heat Transfer. (3) Three hours of lec- ture per week. Prerequisites: Civil Engineering 109. Basic principles of heat and transfer and their application. Subject areas include steady-state and transient system analy- ses for conduction, free and forced convection, boil- ing, condensation and thermal radiation. (SP) Staff


166. Fluid Mechanics of Biological Systems. (3) Three hours of lecture and one hour of discussion per week. Prerequisites: 106 and 109 (may be taken con- currently). This is a general introduction to biological fluid mechanics. The course will primarily examine the biological and mechanical aspect of mammalian flow. If time allows, we will cover animal, bugs, fish, and en- vironmental fluid mechanics but the majority of the class will be on the human body. This class does not presume previous knowledge of anatomy. (F,SP) Savas

167. Microscale Fluid Mechanics. (3) Three hours of lecture per week. Prerequisites: 105, 106, 109, Physics 7B or equivalent. Phenomena of physical, technolog- ical, and biological significance in flows of gases and liquids at the microscale. The course begins with fam- ilar equations of Newtonian fluid mechanics, then proceeds to the study of essentially 1-D flows in the microdomain. Next is a study of the flow of thin films spreading under gravity or surface tension gradients. Lubrication theory of compressible gases leads to consideration of air and liquid flows. This course will cover Stokes' theories of microflows. Less familiar physical phenomena of significance and utility at the microscale are then con- sidered: intermolecular forces in liquids, slip, diffusion coefficients as active symmetries. A review of relevant as- pects of electricity and magnetism precedes a study of electrolytewetting and electrokinetically driven liquid flows. (F) Morris, Szen

170. Engineering Mechanics III. (3) Three hours of lecture per week. Prerequisites: 104 or consent of in- structor. This course builds upon material learned in 104, examining the dynamics of particles and rigid bodies moving in three dimensions. Topics include non-fixed axis rotations of rigid bodies, Euler angles
and parameters, kinematics of rigid bodies, and the Newton-Euler equations of motion for rigid bodies. The course material will be illustrated with real-world examples and exercises in Maple. Applications of the material range from vehicle navigation to celestial mechanics, numerical simulations, and animations. (F) O'Reilly, Tongue

173. Fundamentals of Acoustics. (3) Three hours of lecture per week. Prerequisites: 104. Plane and spherical sound waves. Propagation in gases, liquids, and solids. Applications of the material range from one-dimensional motion of a single particle to three-dimensional motions of rigid bodies and systems of rigid bodies. (SP) Staff

175. Intermediate Dynamics. (3) Three hours of lecture and one hour of discussion per week. Prerequisites: 104 or equivalent. This course introduces and investigates Lagrange's equations of motion for particles and rigid bodies. The subject matter is particularly relevant to applications comprised of interconnected and constrained discrete mechanical components. The material is presented from a theoretical viewpoint. (F,SP) Packard

C176. Orthopedic Biomechanics. (4) Three hours of lecture and one hour of discussion/computer workshop per week. Prerequisites: Mechanical Engineering 130. Students will learn the application of engineering concepts including statics, dynamics, optimization theory, composite beam theory, beam-on-elastic foundation theory, Hertz contact theory, and biofilms behavior that will include forces and moments acting on human joints; composition and mechanical behavior of orthopedic biomaterials; design-analysis of artificial joint, spine, and fracture fixation prostheses; muscle-skeletal tissues including bone, cartilage, tendon, ligament, and muscle; osteoporosis and fracture-risk predication of bones; and bone adaptation. Students will be challenged in developing independent projects that encourage a creative and critical approach to obtaining a specific goal. The course material is in an attempt to gain insight into contemporary design/analysis/problems. Also listed as Biomechanical Engineering C119. (SP) Keaveny

C180. Engineering Analysis Using the Finite Element Method. (3) Three hours of lecture and two hours of laboratory per week. Prerequisites: Engineering 77 or Computer Science 61A; Mathematics 53 and 54; senior status in engineering or applied science. This is an introductory course on the finite element method for seniors in engineering, science, and applied science disciplines. The course covers the basic topics of finite element technology, including domain discretization, polynomial interpolation, application of boundary conditions, assembly of equations, analysis of eigenvalues, and solution of the resulting algebraic systems. Finite element formulations for several important field equations are introduced using both direct and integral approaches. Special emphasis is placed on computer simulation and analysis of realistic engineering problems from solid and fluid mechanics, heat transfer, and magnetohydrodynamics. The course uses FEMLAB, a multiphysics MATLAB-based finite element program that processes a wide array of modeling capabilities and is ideally suited for instruction. Assignments will involve both paper- and computer-based exercises. Computer-based assignments will emphasize the practical aspects of the finite element model construction and analysis. Also listed as Civil and Environmental Engineering C133. (SP) Staff

185. Introduction to Continuum Mechanics. (3) Three hours of lecture and one hour of discussion per week. Prerequisites: Physics 7A; Mathematics 53, 54. Kinematics and elementary dynamics. General concept of a field of vectors and the concept of a tensor. Conservation of mass and balance of linear momentum, angular momentum and energy. Mechanical constitutive equations for ideal fluid, linear elastic solid. (F) Staff

190L. Practical Control System Design: A Systematic Loopshaping Approach. (1) One hour of lecture per week. Prerequisites: 132 or Electrical Engineering 128 (Electrical Engineering 20 may suffice) or similar in-depth introduction experience regarding feedback control systems. After a review of basic loopshaping, we introduce the loopshaping design methodology of McFarlane and Glover that has led to it. The remainder of the course studies the mathematics underlying the new method (one of the most prevalent advanced techniques used in industry) justifying its validity. (F,SP) Packard

190Y. Practical Control System Design: A Systematic Loopshaping Approach. (1) One hour of lecture per week. Prerequisites: 132 or Electrical Engineering 128 (Electrical Engineering 20 may suffice) or similar in-depth introductory experience regarding feedback control systems. The Youla-parametrization of all stabilizing controllers allows one to see both the frequency-domain and time-domain closed-loop design objectives to be cast as convex optimizations, and solved reliably using interior-point methods. This introductory course covers the Youla parametrization, basic elements of convex optimization, and finally control design using these techniques. (F,SP) Packard

H194. Honors Undergraduate Research. (2-4) Course may be repeated for credit. Prerequisites: 3.3 or higher upper division technical GPA and consent of instructor and adviser. Final report required. Students who have completed a satisfactory number of advanced courses may pursue original research under the direction of a faculty staff. A maximum of 3 units of H194 may be used to fulfill technical elective requirements in the Mechanical Engineering program (unlike 198 or 199, which do not satisfy technical elective requirements). (F,SP) Staff

198. Directed Group Studies for Advanced Undergraduate Research. (3) Course may be repeated for credit. One to four hours of directed group study per week. Must be taken on a pass/no pass basis. Prerequisites: Upper division standing and good academic standing. Students must complete a topic or topics in Mechanical Engineering. Credit for 198 or 199 courses combined may not exceed 4 units in any single term. See College for other restrictions. (F,SP) Staff

199. Supervised Independent Study. (1-4) Course may be repeated for credit. Individual conferences. Must be taken on a pass/no pass basis. Prerequisites: Consent of instructor and major adviser. Supervised independent study. Enrollment restrictions apply; see the Introduction to Courses and Curricula section of this catalog. (F,SP) Staff

Graduate Courses

C212. Heat and Mass Transport in Biomedical Engineering. (3) Three hours of lecture per week. Prerequisites: 106 or equivalent, or consent of instructor. Fluid mechanical aspects of various physiological systems, the circulatory, respiratory, and renal systems. Motion in large and small blood vessels. Pulsatile and peristaltic flows. Other biofluid mechanical flows: the eye, ear, etc. Instrumentation for fluid measurements in biological systems and for medical diagnosis and applications. Artifical devices for replacement of organs and/or function, e.g., blood oxygen of MTS, LV or equivalent machines, artificial hearts/circulatory assist devices. Also listed as Bioengineering C212. (SP) Rubinsky

C213. Fluid Mechanics of Biological Systems. (3) Three hours of lecture per week. Prerequisites: 106 or equivalent, or consent of instructor. Fluid mechanical aspects of various physiological systems, the circulatory, respiratory, and renal systems. Motion in large and small blood vessels. Pulsatile and peristaltic flows. Other biofluid mechanical flows: the eye, ear, etc. Instrumentation for fluid measurements in biological systems and for medical diagnosis and applications. Artificial devices for replacement of organs and/or function, e.g., blood oxygen of MTS, LV or equivalent machines, artificial hearts/circulatory assist devices. Also listed as Bioengineering C213. (F) Berger

C214. Advanced Tissue Mechanics. (3) Three hours of lecture and one hour of discussion per week. Prerequisites: C176, 185, graduate standing or consent of instructor. Knowledge of solid and fluid mechanics. The goal of this course is to provide a foundation for characterizing and understanding the mechanical behavior of load-bearing tissues. A variety of mechanics topics will be introduced, including anisotropic elasticity and failure, cellular behavior and quasi-linear viscoelasticity (QLV) theory. Building from this theoretical basis, we will explore the constitutive behavior of a wide variety of biological tissues. After this course, students should have sufficient background to independently study the mechanical behavior of most biological materials. This section will include a series of seminars with external speakers. Also listed as Bioengineering C214. (SP) Staff

C217. Biomimetics—Engineering from Biology. (3) Prerequisites: Graduate standing in engineering or science; former C217 may suffice. This course combines mathematical solutions to specific problems with the aim of determining appropriate engineering analogs. Morphology, scaling, and design in organisms applied to engineering structures. Mechanical principles in nature and their application to engineering devices. Mechanical behavior of biological materials as governed by underlying microstructure, with the potential for synthesis into new engineering materials. Trade-offs in design and efficiency. Students will work in teams on projects where they will take examples of designs, concepts, and models from biology and determine their potential in specific engineering applications. Also listed as Integrative Biology C217 and Bioengineering C217. (F,SP) Dharan

C218. Introduction to MEMS Design. (3) Three hours of lecture and one hour of discussion per week. Prerequisites: Graduate standing in engineering or science; former C218 may suffice. Introduction to MEMS design and fabrication. Emphasis on design and performance of precision machinery for manufacturing. Topics include machine tool elements and structure, sources of error (thermal, static, dynamic, process related), precision machining processes and process models, (diamond turning and abrasive (fixed and free) processes), sensors for process monitoring and control, metrology, actuators, machine design case studies and technologies of precision machining. Students will work in teams to independently design, fabricate, and characterize micro-scale components. Also listed as Electrical Engineering C245. (SP) Staff

C219. Microelectromechanical Systems (MEMS). (3) Three hours of lecture per week. Prerequisites: Graduate standing or consent of instructor. Formerly C219. This course is aimed to provide basic understanding of integrated circuit (IC) processes and microelectromechanical system (MEMS). Technologies including analyses, designs, and manufacturing processes of MEMS will be introduced. The first part of the course emphasizes IC processes including thin film deposition, lithography, and etching. The second part of the course deals with micromachining processes including surface- and bulk-micromachining and rapid prototyping processes. Also listed as Electrical Engineering C246. (SP) Pisano

220. Precision Manufacturing. (3) Three hours of lecture per week. Prerequisites: 101, 102B, or consent of instructor. Introduction to micromachining processes and precision manufacturing. Emphasis on design and performance of precision machinery for manufacturing. Topics include machine tool elements and structure, sources of error (thermal, static, dynamic, process related), precision machining processes and process models (diamond turning and abrasive (fixed and free) processes), sensors for process monitoring and control, metrology, actuators, machine design case studies and technologies of precision machining. Students will work in teams to independently design, fabricate, and characterize micro-scale components. (SP) Dorrfield

221. High-Tech Product Design and Rapid Manufacturing. (3) Three hours of lecture per week enhanced by a semester-long "hands-on" rapid prototyping project. Prerequisites: 101; Recommended: Basic metalworking; IC manufacturing; CAD, C, and Java helpful. This is a "manufacturing survey course" that deals with Internet-based design, rapid prototyping, and a review of manufacturing processes relevant to today's production of consumer electronics or electro-mechanical device. Formerly C221. This course is aimed to provide basic understanding of integrated circuit (IC) processes and microelectromechanical system (MEMS). Technologies including analyses, designs, and manufacturing processes of MEMS will be introduced. The first part of the course emphasizes IC processes including thin film deposition, lithography, and etching. The second part of the course deals with micromachining processes including surface- and bulk-micromachining and rapid prototyping processes. Also listed as Electrical Engineering C246. (SP) Staff
include overview of models of conventional manu-
turing (material removal, joining, forming, and de-
forming), elements of machine tool error and machine
accuracy, and non-traditional manufacturing
processes (laser, water jet, electrical discharge ma-
ching, electro-chemical machining), rapid prototyping,
and process selection, optimization, and planning is-
surance. This course incorporates a laboratory term pro-
ject in the application of non-traditional manufacturing
processes. (SP) Weimann

C223. Polymer Engineering. (3) Three hours of lec-
ture and one hour of discussion per week. Prerequi-
tes: Civil Engineering 130, Engineering 45. A survey of
the structure and mechanical properties of advanced
engineering polymers. Typical topics include rubber elasticity,
viscoelasticity, mechanical properties, yielding, de-
formation, and fracture mechanisms of various classes
of polymers. The course will discuss degradation schemes
of polymers and long-term performance issues. The class will include polymer applications in
bioengineering and medicine. Also listed as Bioen-
gineering C223. (F) Staff

(3) Three hours of lecture and one hour of discussion
per week. Prerequisites: Civil and Environmental En-
gineering 130, Engineering 45. This course covers
elastic and plastic deformation under static and dy-
namic loads. Prediction and prevention of failure by
yielding, fracture, fatigue, creep, corrosion, and wear.
Basic elements of plasticity theories are discussed. (SP) Dharan, Zohdi

C225. Deformation and Fracture of Engineering Materials. (4) Four hours of lecture per week. Prerequi-
tes: Civil Engineering 130, Engineering 45. This course covers deformation and fracture behavior of en-
gineering materials for both monotonic and cyclic load-
ing conditions. Also listed as Materials Science and En-
gineering C212. (SP) Ritchie

226. Tribology. (3) Three hours of lecture per week. Prerequi-
of wear. Response of materials to surface treatments. Plastic deformation, void/crack
cracking and crack propagation. Delamination wear. Microstructural effects in wear processes. Mechani-
cal layered materials. Solidification and boundary liquid film lubrication. Friction and wear of polymers
and fiber-reinforced polymer composites. Brief introduc-
tion to metal cutting and tool wear mechanisms. (SP) Komvopoulos

227. Mechanical Behavior of Composite Materials. (3) Students will receive no credit for 227 after taking
229 when offered after Fall 2006. Prerequisites: Graduate
standing or consent of instructor. Formerly 290U. Response of composite materials (fiber and par-
ticulate-reinforced materials) to static, cyclic, creep and thermo-mechanical loading. Manufacturing-induced variability, and residual stresses. Fatigue be-
havior, fracture mechanics and damage development. Role of the reinforcement-matrix interface in mechan-
ical behavior. Environmental effects. Dimensional sta-
bility and thermal fatigue. Application to polymer, metal,
ceramic, and carbon matrix composites. (SP) Dharan

228. Computer-Aided, Optimal Mechanical Design. (3) Three hours of lecture per week. Prerequisites:
Graduate standing and the equivalent of both 102B and
128B. This course will cover the optimal mechan-
design of engineering or mechanical systems and components. A variety of optimization techniques will be developed,
applied to mechanical design, and implemented on the
computer. (SP) Agogino, McMains

229. Design of Basic Electro-Mechanical Devices. (3) Three hours of lecture per week. Prerequisites: Elec-
tronics I (Elec 102) or consent of instructor. A fundamen-
tal introduction to the physics and circuitry of basic
electro-mechanical devices, sensors, actuators, and
classic electrical components. Also listed as Mechanical Engineering / 363

brush and brushless motors. A design project is re-
quired. (F,SP) Staff

230. Real-Time Applications of Mini and Micro Com-
puters. (4) Three hours of lecture and three hours of labora-
tory per week. Prerequisites: Graduate standing or consent of
instructor for graduate students, or consent of advanced undergraduates. Mini and micro computers, operating in real time, have become ubiquitous com-
ponents in engineering systems. The purpose of this course is to familiarize the engineering us-
ers of such systems through lectures stressing small com-
puter structure, programming, and output/input oper-
ation, and through laboratory work with mini and micro computer systems. (F) Auslander

232. Advanced Control Systems I. (3) Three hours of lecture and one hour of discussion per week. Pre-
requisites: 233 and 239. Introduction to classical and modern control theory. State space models for linear
and non-linear systems, stability, controllability, observability, and optimal control. (F) Tomizuka, Horowitz

234. Multivariable Control System Design. (3) Stu-
dents may not take 234 for credit if they have taken
291C. Three hours of lecture per week. Prerequisites:
232 or EECS 221A, as well as firm foundation in clas-
sical control. Formerly 291C. Analysis and synthesis techniques for multi-input (MIMO) control systems.
Emphasis is on the effect that model uncertainty has on the design process. (SP) Packard

235. Switching Control and Computer Interfacing. (4) Three hours of lecture and three hours of laboratory
per week. Prerequisites: 230. Design and analysis of control systems utilizing switching elements. Electronic
and microprocessor devices for sequential logic. Ap-
lications to control of mechanical systems and control
computer interfacing. (SP) Auslander

236. Control and Optimization of Distributed Para-
meter Systems. (3) Three hours of lecture per week.
Distributed systems and PDE models of physical the-
dynamics, network traffic, water distribution, fluid me-
chanics, electromagnetism, blood vessels, beams, road pavement, structures, etc.). Fundamental solution methods for PDEs: separa-
tion of variables, Fourier transforms, characteristics, numerical methods, spectral methods. Stability analy-
ysis, Adjoint-based optimization. Lyapunov stabilization. Differential flatness. Viability control. Hamilton-Jacobi-
based control. Also listed as Electrical Engineering
C291 and Civil and Environmental Engineering C291F. (SP) Bayen

237. Control of Nonlinear Dynamic Systems. (3) Three hours of lecture and one hour of discussion per
week. Prerequisites: 232. Fundamental properties of nonlinear systems and nonlinear control.
Controller Design via Lyapunov methods. Equivalent Lin-
erization methods including limit cycle prediction. (SP) Hedrick

239. Advanced Design and Automation. (4) Three hours of lecture and three hours of laboratory per week. Prerequisites: Graduate standing in engineering,
or science and one course in Control. This course will
provide students with a solid understanding of smart
products and the use of embedded microprocessors in
products and control systems. Also listed as Electrical
and Computer Engineering C239B. (SP) Bayen

243. Advanced Methods in Free-Surface Flows. (3) Students will receive no credit for 243 after taking
C243/Ocean Engineering C243. Three hours of lecture per week. Prerequisites: 260A or Civil Engineering
200; 241B recommended. Formerly C243A. Analytical and numerical methods in free-surface problems. El-
ements of inviscid external lifting and nonlifting flows. Analytical solutions in special coordinates systems.
Integral-equation methods: formulations and imple-
mentation. Multiple-pole solutions. Free-surface Green functions in two and three dimensions. Hybrid integral-equation methods. Finite-element formu-
lations. Variational forms in time-harmonic flows. Finite-
difference forms, stability, and accuracy. Boundary-
value problems. Unsteady linearized wave-body interaction in time domain. Nonlinear break-
ing waves calculations. Particle dynamics. Extensive hands-on experience of microcomputers and/or work-
stations in developing solution. (F,SP) Vafidis

251. Heat Conduction. (3) Three hours of lecture per week. Prerequisites: 151, Engineering 230A. Analyti-
cal and numerical methods for the determination of the
conduction of heat in solids. (F) Staff

252. Heat Convection. (3) Three hours of lecture per week. Prerequisites: 151, 265A; Engineering 230A.
The transport of heat in fluids in motion, free and forced convection in laminar and turbulent flow over surfaces and within ducts. (SP) Greff

253. Thermal Radiation. (3) Three hours of lecture per week. Prerequisites: 151. Thermal radiation prop-
erties of gases, liquids, and solids; the calculation of ra-
diant energy transfer. (F) Chigrisopoulos, Majumdar

254. Thermodynamics I. (3) Three hours of lecture per week. Prerequisites: 105. Axiomatic formulation of
thermodynamics. Laws of thermodynamics, first law, second law, and third law. Quantitative models, including
mechanical description of atomic and molecular struc-
ture. Statistical-physical evaluation of thermody-
namic properties of gases, liquids, and solids. Ele-

*Professor of the Graduate School
Recipient of Distinguished Teaching Award
mentary kinetic theory of gases and evaluation of transport properties. (F) Carey

256. Energy Transfer in Gaseous and Condensed Phases. (3) Three hours of lecture per week. Prerequisites: 254 or consent of instructor. Course introduces statistical mechanics, kinetic theory, and classical reaction theories, all at the level of microscopic energy transfer processes, used for modeling of gaseous and gas-surface reactive systems. (SP) Frenkelh

256. Geophysical Fluid Mechanics. (3) Three hours of lecture per week. Prerequisites: 105, 106, and 140. 140 is recommended. Multiple conserved quantities, conservation equations with reactions. Laminar and turbulent fluid flows. Rankine-Hugoniot relations. Diffusion flames. Boundary layer combustion, ignition, and stability. (SP) Dibble

257. Advanced Combustion. (3) Three hours of lecture per week. Prerequisites: 260A. Critical analysis of combustion phenomenon. Conservation relations applied to reacting systems. Reactions are treated by both asymptotic and numerical methods. Real hydrocarbon kinetics are used; where available reduced kinetic mechanisms are introduced. Flame propagation theory and experiments are discussed in detail for both laminar and turbulent flows. (F) Staff

258. Heat Transfer with Phase Change. (3) Three hours of lecture per week. Prerequisites: 151. Heat transfer analyses are made in the case of phase change. Topics include thermodynamics of phase change, evaporation, condensation, nucleation and bubble growth, two phase flow, convective boiling and condensation, melting and solidification. (SP) Carey

259. Microscale Thermophysics and Heat Transfer. (3) Three hours of lecture per week. Prerequisites: 151, 254, or consent of instructor. This course introduces advanced statistical thermodynamics, nonequilibrium thermodynamics, and kinetic theory concepts used to analyze microscale thermophysical processes and explores applications in which microscale transport plays an important role. (SP) Carey, Majumdar

260A. Advanced Fluid Mechanics I. (3) Three hours of lecture and one hour of discussion per week. Prerequisites: 106; 185 (strongly recommended) or consent of instructor. Introduces the foundations of fluid mechanics. Exact flow solutions are used to develop a physical insight of the fluid flow phenomena. Rigorous derivation of the equations of motion. Incompressible and compressible potential flows. Canonical viscous flows. (F) Staff

260B. Advanced Fluid Mechanics II. (3) Three hours of lecture and one hour of discussion per week. Prerequisites: 260A or consent of instructor. Develops a working knowledge of fluid mechanics by identifying the essential features of the classical potential systems and explores applications in which microscale transport plays an important role. Boundary layers, creeping flows, rotational flows, rotating flows, stability and transition, introduction to turbulence. (SP) Staff

260C. Advanced Fluid Mechanics III. (3) Three hours of lecture per week. Prerequisites: 260A and 260B or consent of instructor. A presentation of four related topics in high Reynolds number flow; stability theory, waves, rotating flows and geophysical_atmospheric fluid dynamics. Examples are considered at the level of the atmosphere and oceans, shallow water wave propagation, and the dynamics of the ocean current and streams. (SP) Staff

260D. Advanced Fluid Mechanics IV. (3) Three hours of lecture and one hour of discussion per week. Prerequisites: 260A and B, or 241A; or consent of instructor. Expanded coverage of compressible flow and boundary layers beyond material in 260A-260B. Time-harmonic elements of free-surface flows. (F,SP) Berger

262. Theory of Fluid Sheets and Fluid Jets. (3) Three hours of lecture per week. Prerequisites: 185 and 186, or equivalents. Conservation laws in three dimensions, coordinate systems, and their applications. Direct formuation of non-linear theories for sheets and jets for these fluids with surface tension and gravity. Application to water waves, hydraulic jump, flow in waterfall, and surface tension of a boat. Capillary instability in a viscous jet. (F) Marcus


267. Geophysical Fluid Mechanics. (3) Three hours of lecture per week. Prerequisites: 265A or equivalent. An introduction to the fluid mechanics and atmospheric motions of the Earth’s interior (mantle and core). Buoyant creeping flow. Rotation inside a sphere. Modes of wave propagation in rotation and stratified flows. (F) Staff

C268. Physicochemical Hydrodynamics. (3) Three hours of lecture per week. Prerequisites: A first graduate course in fluid mechanics is recommended. An introduction to the hydrodynamics of reacting and working fluids. Balance laws and short-range forces. Dimensionless numbers, scaling and lubrication approximation. Rayleigh instability. Marangoni effect. The moving contact line. Wetting and short-range forces. The dynamic contact angle. Dewetting, Coating flows. Effect of surfactants and electric fields. Wetting of rough or porous surfaces. Contact angles for evaporating systems, also listed as Chemical Engineering C268. (F,SP) Morris

273. Oscillations in Linear Systems. (3) Three hours of lecture per week. Prerequisites: 104 and 133. Response of discrete and continuous dynamical systems. Stability analysis of damped and undamped, to harmonic and general time-dependent loading. Convolution integrals and Fourier and Laplace Transform methods. Lagrange’s equations; Eigenvalues; Orthogonality; generalized coordinates; nonreciprocal and degenerate systems; Rayleigh quotient. (F) Ma

274. Random Oscillations of Mechanical Systems. (3) Three hours of lecture per week. Prerequisites: 104 and 133. Random variables and random processes. Linear, stationary, ergodic processes. Any, random Fourier analysis of linear and nonlinear, discrete and continuous, mechanical systems under stationary and nonstationary excitations. Vehicle dynamics. Applications to the dynamic analysis of buildings and control. (SP) Ma

275. Advanced Dynamics. (3) Three hours of lecture per week. Prerequisites: 175. Review of Lagrangian dynamics. Legendre transform and Hamilton’s equations, Cyclic coordinates, Canonical transformations, Hamilton-Jacobi theory, integrability, Dynamics of asymmetric systems. Approximation theory. Current topics in analytical dynamics. (F) Staff

277. Oscillations in Nonlinear Systems. (3) Three hours of lecture per week. Prerequisites: 175. Oscillations in nonlinear systems having one or two degrees of freedom. Qualitative and quantitative methods: methods of Liapunov, normal form expansions, approximate methods, Self-excited oscillations, limit cycles, and domains of attraction. (F,SP) Szequi

280. Introduction to the Finite Element Method. (3) Three hours of lecture and one hour of discussion per week. Prerequisites: Mathematics 54A or 54B, and one semester of applied field theories of solid/fluid mechanics and/or thermal science. Formerly 280. Weighted-residual and variational methods of approximation. Canonical construction of linear and finite element spaces for energy minimization of systems. General class of equations. Applications to linear partial differential equations of interest in engineering and applied science. (F) Papadopoulos, Zohdi

280B. Finite Element Methods in Nonlinear Continua. (3) Three hours of lecture per week. Prerequisites: 280A or equivalent; background in continuum mechanics at the level of 185. Advanced finite element methods. Constrained linearization of kinematical variables and balance laws, Incremental formulations of the equations of motion. Solution of the nonlinear field equations by Newton’s method. General treatment of constraints. Applications to nonlinear material and kinematical modeling on continua. (SP) Papadopoulos

281. Methods of Tensor Calculus and Differential Geometry. (3) Three hours of lecture per week. Prerequisites: Mathematics 33C, Scalar and classical differential geometry. The tensor concept and the calculus of tensors, the Riemann-Christoffel tensor and its properties, Riemannian and Euclidean spaces. Geometry of a surface, equations of Gauss and Codazzi. (F) Staff

282. Theory of Elasticity. (3) Three hours of lecture per week. Prerequisites: 185. Fundamentals and general theorems of the linear theory of elasticity (in three dimensions) and the formulation of static and dynamic boundary value problems. Application to torsion, flexure, and two-dimensional problems of plane strain, generalized plane stress, and bending of plates. Representation of basic field equations in terms of stresses and the determination of stresses in three-dimensional solutions. (SP) Bog, Steigmann

283. Wave Propagation in Elastic Media. (3) Three hours of lecture per week. Prerequisites: 185. Propagation of mechanical disturbances in unbounded and bounded media. Surface waves, wave reflection and transmission at interfaces and boundaries. Stress waves due to periodic and transient sources. Some additional topics may vary with instructor. (F) Bog


285A. Foundations of the Theory of Continuous Media. (3) Three hours of lecture per week. Prerequisites: 185 or Mathematics 115. Formerly 285. A brief review of continuum mechanics, including thermodynamics of deformable media, entropy production, and related entropy inequalities. Thermomechanical response of dissipative media, including viscous fluids and nonlinear elastic solids. Discussion of invariance, internal constraints, material symmetry, and other special topics. (F,SP) Casey

285C. Electrodynamics of Continuous Media. (3) Three hours of lecture per week. Prerequisites: A first course in continuum mechanics (such as 185 or Civil Engineering 231.). Formerly 284B. This course presents the fundamentals of electromagnetic interactions in deformable continuous media. It develops the background necessary to understand various modern technologies such as MEMS devices, sensor networks, actuators, and a wide range of additional phenomena. The emphasis of this course is on fundamentals, beginning with Maxwell’s equations in vacuum, the aether relativity concept and the electrodynamics of materials. The treatment is general within the limits of nonrelativistic physics and accommodates coupling with mechanical and thermal effects. The topics discussed are all developed at a general level including the effects of finite deformations. Various linear models, which are especially useful in applications, are developed through specialization of general theory. This material will be of interest to students in engineering, physics, and applied mathematics. (F,SP) Steigmann

286. Theory of Plasticity. (3) Three hours of lecture per week. Prerequisites: 185. Formulation of the theory of plasticity relative to loading surfaces in both
strain space and stress space and associated loading criteria. Nonlinear constitutive equations for finitely deformed elastic-plastic materials. Discussion of strain-hardening and special cases. Applications. (F) Casey, Papadopoulos

287. Multiscale Modeling and Design of New Materials. (3) Three hours of lecture per week. Prerequisites: 185 or equivalent, 280A or equivalent. This course focuses on methods for the modeling, analysis, numerical simulation and design of micro- and macro-geometric materials, with a central theme being the determination of relationships between the microstructure and the macroscopic response or "macroscopic property." The course begins and is designed in an interdisciplinary manner for graduate students in engineering, applied mathematics, materials science, and physics who are interested in methods to accelerate the discovery and design of new materials. Examples draw primarily from various mechanical, thermal, and electrical applications, although the techniques developed apply to any partial differential system possessing oscillatory coefficients. (SP) Zohdi


289. Theory of Shells. (3) Three hours of lecture per week. Prerequisites: 185 and 281. A direct formulation of a general theory of shells and plates based on the concept of Cosserat (or Directed) surfaces. Nonlinear concept is used to study nonlinearly deformed elastic shells. Linear theory and a special nonlinear theory with small strain accompanied by large or moderately large rotation. Applications. (F,SP) Johnson, Steigmann

290A. Nonlinear Dynamics of Continuous Systems. (3) Three hours of lecture per week. Prerequisites: 175, 192. This course uses methods from dynamical systems theory for the analysis of the nonlinear dynamics of elastic bodies. Various methods for modeling these bodies will be used, and the dynamics predicted by these models of the body will be explored. Of particular interest will be the dynamics of nonlinearly elastic rods and strings. (SP) O'Reilly

290B. Topics in Continuum Mechanics. (3) Three hours of lecture per week. Prerequisites: 185. The objective of the course is to present a coherent and integrated treatment of continuum mechanics and to continue with illustrative applications to diverse areas in fluid and solid mechanics. The illustrative applications will be drawn from such topics as liquid crystals, microcracking of brittle materials, mechanics of cell biology, fluid flow problems (both inviscid and viscous flow) for free surface flow in channels past an obstacle of any shape, motion of jets of arbitrary cross-section, nonlinear deformation of elastic rods and shells and flow in pipes, among others. (SP,SP) Staff

290C. Topics in Fluid Mechanics. (3) Three hours of lecture per week. Prerequisites: Consent of instructor. Lectures on special topics which will be announced at the beginning of each semester that the course is offered. Topics may include transport and mixing, geophysical fluid dynamics, biofluid dynamics, oceanography, free surface flows, non-Newtonian fluid mechanics, among other possibilities. Also listed as Environ Sci, Policy, and Management C291, Physics C290I, Mathematics C290C, Chemical Engineering C295M, Civil and Environmental Engineering C290K, and Bioengineering C290C. (F,SP) Staff

290D. Solid Modeling. (3) Three hours of lecture per week. Prerequisites: Computer Science 61B or equivalent, linear algebra; Computer Science 184 recommended. Graduate survey of solid modeling research. Representations and algorithms for 3D solid geometry. Applications in design, analysis, planning, manufacturing of mechanical parts, including CAD/CAM, reverse engineering, meshing, feature recognition, mold-making, and rapid prototyping. (SP) McMains


290M. Expert Systems in Mechanical Engineering. (3) Three hours of lecture per week. Prerequisites: 107A, 102B or equivalent. Introduction to artificial intelligence and decision analysis in mechanical engineering. Fundamentals of analytic design, probability theory, failure analysis, risk assessment, and Bayesian and logical inference. Applications to expert systems in probabilistic mechanical engineering design and failure diagnostics. Influence diagrams to codify expert knowledge and to evaluate optimal design decisions. (SP) Agogino

290N. System Identification. (3) Three hours of lecture per week. Prerequisites: 232, Electrical Engineering and Computer Sciences 221A or consent of instructor. This course is intended to provide a comprehensive treatment of identification techniques that are relevant to classical system identification and recent work in control-oriented system identification. Numerical, practical, and theoretical aspects will be covered. Topics treated include time and frequency domain methods, recursive estimation, identification of structured nonlinear systems, modeling uncertainty, and state-space methods. (F,SP) Poolla

290P. New Product Development: Design Theory and Methods. (3) Three hours of lecture per week. Prerequisites: Graduate standing, consent of instructor. This course is aimed at developing the interdisciplinary skills required for successful product development in today’s competitive marketplace. We expect students to be disciplinary experts in their own field (e.g., engineering, business). By bringing together multiple perspectives, we will learn how product development teams can focus their efforts to quickly create cost-effective products that exceed customers’ expectations. (F) Agogino

290Q. Dynamic Control of Robotic Manipulators. (3) Three hours of lecture per week for five weeks, one hour of lecture per week for 10 weeks, four hours of laboratory per week for full term. Prerequisites: 230, 232, or consent of instructor. Dynamic and kinematic analysis of robotic manipulators. Sensors (position, velocity, force, and vision). Actuators and power transmission lines. Direct drive and indirect drive. Point to point control. Straight and curved path following. Industrial practice in servo control. Applications of optimal control: linear quadratic control, nonlinear control, and direct/indirect adaptive controls. Force control and compliance control. Collision avoidance. Utilization of dynamic controls (SP) Horowitz, Kazerooni

290R. Topics in Manufacturing. (3) Course may be repeated for credit as topic varies. Three hours of lecture per week. Prerequisites: Consent of instructor. Advanced topics in manufacturing research. Topics vary from year to year. (F,SP) Dornfield, McMains, Wright

290S. Hybrid Systems and Intelligent Control. (3) Three hours of lecture per week. Formerly 291E. Analysis of hybrid systems formed by the interaction of continuous time dynamics and discrete-event controllers. Discrete-event systems models and language descriptions. Finite-state machines and automata. Model verification and control of hybrid systems. Signal-to-symbol synthesis of adaptive, neural, and fuzzy-control systems. Applications to robotics and Intelligent Vehicle and Highway Systems (IVHS). Also listed as Electrical Engineering C291E. Hedrick

290T. Plasmonic Materials. (3) Course may be repeated for credit as topic varies. Three hours of lecture per week. Prerequisites: Physics 110A or consent of instructor. This course deals with fundamental aspects of plasmonic materials. The electromagnetic responses of those artificially constructed materials will be discussed. Physics of surface plasmons and dispersion engineering will be introduced. Resonant phenomena associated with the negative permittivity and permeability and the left-handed propagation will be presented. Methods of design, fabrication, and characterization of plasmonic materials will be discussed. (F,SP) Zhang

298. Group Studies, Seminars, or Group Research. (1-8) Course may be repeated for credit. Sections 1-49 to be graded on a satisfactory/unsatisfactory basis. Sections 50 and above to be graded on a letter-grade basis. Advanced studies in various subjects through special seminars on topics to be selected each year. Informal group studies of special problems, group participation in comprehensive design problems, or group research on complete problems for analysis and experimentation. (F,SP) Staff

C298A. Topics in Fluid Mechanics. (1,2) Course may be repeated for credit. One hour of seminar per week. Must be taken on a satisfactory/unsatisfactory basis. Prerequisites: Consent of instructor. Lectures on special topics which will be announced at the beginning of each semester that the course is offered. Topics may include transport and mixing, geophysical fluid dynamics, biofluid dynamics, oceanography, free surface flows, non-Newtonian fluid mechanics, among other possibilities. Also listed as Environ Sci, Policy, and Management C291, Physics C290I, Mathematics C290C, Chemical Engineering C295M, Civil and Environmental Engineering C290K, and Bioengineering C290C. (F,SP) Staff

299. Individual Study or Research. (1-12) Course may be repeated for credit. May be taken on a satisfactory/unsatisfactory basis. Prerequisites: Graduate standing in engineering, physics, or mathematics. Investigations of advanced problems in mechanical engineering. (F,SP) Staff

602. Individual Study for Doctoral Students. (1-8) Course may be repeated for credit. Course does not satisfy unit or residence requirements for doctoral degree. Must be taken on a satisfactory/unsatisfactory basis. Prerequisites: Graduate standing in engineering, physics, or mathematics. Investigate of advanced problems in mechanical engineering. (F,SP) Staff

Professional Courses

301. Teaching of Mechanical Engineering at the University Level. (1-4) Course may be repeated for credit. One hour of seminar per week. Must be taken on a satisfactory/unsatisfactory basis. Weekly seminars and discussions on effective teaching methods. Educational objectives. Theories of learning. The lecture and small group or seminar presentations. Three hours of lecture and one hour of seminar per week. Must be taken on a satisfactory/unsatisfactory basis. (F,SP) Staff
MEDIEVAL STUDIES

(Course of Letters and Science)

Program Office: CASMA, 7233 Dwinnelle Hall, (510) 642-4218, is.berkeley.edu/dept/medieval

Director: Maureen Miller, Ph.D.

Graduate Advisor: Daniel Metla, Ph.D.

Professors

Robert Alter, Ph.D. (Near Eastern Studies and Comparative Literature)
Albert Russell Acсqui, Ph.D. (Italian Studies)
Gerard Caspar, Ph.D. (History)
Susanna Emi, Ph.D. (History and Religious Studies)
Charles B. Faulhaber, Ph.D. (Spanish and Portuguese)
David Hilt, Ph.D. (French and German)
Niklaus Lagier, Ph.D. (German)
John Lindo, Ph.D. (Spanish and Portuguese)
Laurent Mayali, License en Droit, M.A., Docteur de l'Etat en Droit (Law)
Loren Partidge, Ph.D. (History and Italian Studies)
Irmengard Rauch, Ph.D. (German)
Thomas F. Shannon, Ph.D (German and Dutch Studies)
Elaine C. Tennant, Ph.D. (German)
David H. Wright, Ph.D. (History)
William J. Souewas (Emeritus), Ph.D.
Thomas Brady (Emeritus), Ph.D.
Carol J. Clover (Emeritus), Ph.D (Scandinavian Studies and Rhetoric)
Louise George Clubb (Emeritus), Ph.D.
Joseph J. Duggan (Emeritus), Ph.D. (French and Comparative Literature)
Mary Kay Duggan (Emeritus), Ph.D. (Music)
Ralph Hexter (Emeritus), Ph.D. (Classics and Comparative Literature)
Gerd Hillen (Emeritus), Ph.D.
Leonard H. Johnson (Emeritus), Ph.D.
Anne Middleton (Emeritus), Ph.D. (English)
James T. Monroe (Emeritus), Ph.D. (Near Eastern Studies and Comparative Literature)
Charles E. Murgia (Emeritus), Ph.D.
Alan Nelson (Emeritus), Ph.D.
Johan P. Snapper (Emeritus), Ph.D.
Randolph Starn (Emeritus), Ph.D. (History and Italian Studies)
Friede C. Taubach (Emeritus), Ph.D.

Associate Professors

Steven Belkoff, Ph.D. (Italian Studies)
Gary B. Holland, Ph.D. (Linguistics)
Steven Justice, Ph.D. (English)
Geoffrey Koziol, Ph.D. (History)
Daniel F. Melia, Ph.D. (Rhetoric and Celtic Studies)
Jennifer Goodwin (Distinguished Visiting Professor; and occasional courses in Medieval Latin, paleography, and manuscript studies. In addition, students are urged to consult the medieval offerings in the departments or programs of Comparative Literature, Classics, Comparative Literature, Dramatic Art, English, French, German, History, Italian Studies, Linguistics, Music, Near Eastern Studies, Philosophy, Religious Studies, Rhetoric, Scandinavian, Slavic, and Spanish and Portuguese as well as in the School of Law and the Graduate Theological Union. An updated list of such offerings is posted each semester on the Medieval Studies web site.

Upper Division Courses

C140. Medieval Latin. (4) Three hours of lecture per week. Prerequisites: Latin 100 or consent of instructor. Introduction to Medieval Latin: Selected readings in prose and poetry from Late Antiquity to the end of the Middle Ages, with attention to the special characteristics of the Latin language during this period. Also listed as Latin C140. (F,SP)

150. Studies in Medieval Culture. (2-4) Course may be repeated for credit. One hour of lecture per week for four units and normally three hours of lecture per week for five units. In the event that the instructor is in residence for fewer than fifteen weeks, the course may be offered for either 2 or 3 units of credit, in proportion to the number of actual contact hours. Course may be repeated for credit. Normally taught by the Visiting Distinguished Professor of Medieval Studies. An interdisciplinary exploration of Medieval culture, focusing on an area of the instructor's expertise. Specific topic varies with instructor. (F,SP)

Graduate Courses

200. Introduction to Research Materials and Methods. (2) Two hours of lecture/discussion per week. Must be taken on a satisfactory/unsatisfactory basis. Prerequisites: Graduate standing or consent of instructor. Basic materials and resources in fields represented in the Medieval Studies program, and in some subjects involving expertise in more than one discipline (e.g., liturgy, codology). Emphasis on research aids and critical evaluation of their use. Staff

205. Medieval MSS as Primary Sources. (2) Three hours of seminar per week. Must be taken on a satisfactory/unsatisfactory basis. This course explores the use of medieval MSS as primary sources for scholarship in a variety of disciplines (including literacy studies, art history, music, intellectual history, social history, and canon law). After reviewing the fundamental principles of palaeography and codicology, students will compare various manuscripts using digitized images from special collections, including the Bancroft Library of UC Berkeley and the Special Collections Library of Columbia University. Faculty members from both those institutions will collaborate in teaching the course using distance learning technology. (F,SP)

250. Seminar in Medieval Culture. (2-4) Course may be repeated for credit. Course may be taken for less than 4 units on a satisfactory/unsatisfactory basis with consent of instructor. Three hours of seminar per week. Prerequisites: Graduate standing. Taught by the Distinguished Visiting Professor of Medieval Studies on a topic related to his or her current research. It is required that the instructor is in residence for fewer than 15 weeks, the course will be offered for either 2 or 3 units of credit, in proportion to the number of actual contact hours. (SP)

MICROBIOLOGY

(Course of Natural Resources, Interdepartmental Graduate Group)

Office: 111E Koshland Hall, (510) 642-5167

Professors

Lisa Alvarez-Cohen, Ph.D. (Civil and Environmental Engineering)
Jill Bandfield, Ph.D. (Earth and Planetary Sciences and Environmental Science, Policy and Management)
Carla Bertozzi, Ph.D. (Chemical and Environmental Engineering)
Michael Butcher, Ph.D. (Molecular and Cell Biology)
Thomas D. Brooks, Ph.D. (Plant and Microbial Biology)
Bob B. Buchanan, Ph.D. (Plant and Microbial Biology)
Gertrude C. Buehner, Ph.D. (Plant and Microbial Biology)
Richard Calendar, Ph.D. (Molecular and Cell Biology)
Zachary C. Chau, Ph.D. (Plant and Microbial Biology)
Nicholas R. Cozzarelli, Ph.D. (Molecular and Cell Biology)
Mary K. Firestone, Ph.D. (Environmental Science, Policy and Management)
Suzanne M. Flesig, O.D., Ph.D. (Optometry)
N. Louise Glass, Ph.D. (Plant and Microbial Biology)
Andrew O. Jackson, Ph.D. (Plant and Microbial Biology)
David Jenkins, Ph.D. (Civil and Environmental Engineering)
Jay D. Keasling, Ph.D. (Chemical Engineering)
Daniel E. Koshland, Ph.D. (Molecular and Cell Biology)
Sydney G. Kustu, Ph.D. (Plant and Microbial Biology)
Terrance Leighton, Ph.D. (Molecular and Cell Biology)
Steven Lindow, Ph.D. (Plant and Microbial Biology)
Terry E. Machen, Ph.D. (Molecular and Cell Biology)
Daniel A. Portnoy, Ph.D. (Molecular and Cell Biology)
Leo W. Riley, Ph.D. (Public Health)
Jasper D. Rine, Ph.D. (Molecular and Cell Biology)
Randy W. Schekman, Ph.D. (Molecular and Cell Biology)
Geoff S. Sensabaugh, D. Crim. (Public Health)
Brian J. Staskawicz, Ph.D. (Plant and Microbial Biology)
Richard S. Stephens, Ph.D. (Public Health)
John W. Taylor, Ph.D. (Plant and Microbial Biology)
Jeremy Thormer, Ph.D. (Plant and Microbial Biology)
Loy E. Volkman, Ph.D. (Plant and Microbial Biology)
Patrick T. Zambrayskis, Ph.D. (Plant and Microbial Biology)
David Zusman, Ph.D. (Molecular and Cell Biology)

Associate Professors

Jennette L. A. Daniel, Ph.D. (Molecular and Cell Biology)
John Coates, Ph.D. (Plant and Microbial Biology)
Fennyong Liu, Ph.D. (Public Health)
Krista K. Nyogi, Ph.D. (Plant and Microbial Biology)

Assistant Professors

Ignacio H. Chapela, Ph.D. (Environmental Science, Policy, and Management)
Laurent Coscoy, Ph.D. (Molecular and Cell Biology)
Eva Harris, Ph.D. (Public Health)
Kathleen Ryan, Ph.D. (Plant and Microbial Biology)

Adjunct Professors

Caroline M. Kane, Ph.D. (Molecular and Cell Biology)
Sangwei Lu, Ph.D. (School of Public Health)

Graduate Program in Microbiology

The Graduate Group in Microbiology is composed of 43 faculty from diverse departments, colleges, and schools (Plant and Microbial Biology; Molecular and Cell Biology; Public Health; Environmental Engineering; Chemical Engineering; Environmental Science, Policy, and Management; Nutritional Science and Toxicology; Optometry; and others) and is administered by the Department of Plant and Microbial Biology. The group awards the Ph.D. degree in microbiology. Students in the group have access to diverse courses through a coordinated program of study that allows each student to pursue specialized interests. Students gain a breadth of understanding of microbiology from the molecular to the cellular level.
levels of organization, as well as the interactions of microbes—beneficial and pathogenic—with other organisms.

The graduate program features an introductory seminar (Faculty Research Review), a one-semester core course, and additional special-topic courses and seminars in areas of faculty specialties. The core course, Critical Thinking in Microbiology, addresses the following areas: biochemistry, physiology, development, genetics, microbial interactions. The research of many faculty spans more than one of these categories. In addition, the research goals vary from addressing fundamental questions in biology to applied studies in the control or use of microbes. Some faculty conduct research on both fundamental and applied topics.

Students admitted to the Graduate Group in Microbiology program are expected to demonstrate academic excellence and potential for independent scientific research and to have satisfied, or satisfy through additional coursework, the curriculum requirement of an undergraduate major in microbial biology. Admissions committee composed of three to five faculty members and one graduate student will review applications and make recommendations to the full faculty on admissions matters. Recommendations for admission will be based on grades in university-level undergraduate and graduate courses, letters of recommendation, written statement, and may relate to small and professional goals, and other evidence of academic accomplishment. Scores on standardized tests, such as the Graduate Record Examination, are required of all applicants. Students seeking admission to the Graduate Group in Microbiology program (iastp) should contact the Near Eastern Studies graduate adviser.

Lower Division Requirements. 1) NES 10, Introduction to the Near East (4 units). A survey course introducing the fundamentals of Middle Eastern civilization presented in a broad historical framework; 2) MES 10, Social Issues in Middle Eastern Studies (4 units). A lower division interdisciplinary course about contemporary social issues relating to the Middle East that treats regional and international questions such as: (1) the political economy of development in the Middle East; (2) identity issues, including ethnicity, nationality and religious revival; and (3) family and community affairs; or 3) History 12, Introduction to the Middle East (4 units). An introduction to historical developments in the Middle East from the rise of Islam to the present, including the significance of Islamic civilizations from a world historical perspective, the construction of the modern state system from the late Ottoman era through the period of British and French colonial rule, the newly independent states of the Middle East and the postcolonial period.}

Program Overview

Since 1981, the interdisciplinary major in Middle Eastern Studies (MES) has provided Berkeley students with the opportunity to study a region of great historical and current significance whose political, economic, and social development is closely linked to that of our own society. The MES major covers the Arab world, Turkey, Iran, and Israel, intertwining historical, geographic and economic and political analysis, with an emphasis on the modern and contemporary Middle East. Its broad and balanced program of study draws on a wide variety of Middle East-related courses offered by faculty from more than 20 different departments and schools in the University. Students in the MES major select one of four Middle Eastern languages of today: Arabic, Hebrew, Persian, or Turkish. MES graduates have gone on to work in industry and government, both in the United States and abroad. About half pursue graduate studies, many of whom then go on to academic or professional careers.

The MES major falls under the academic supervision of the Center for Middle Eastern Studies. The CMES organizes public lectures, publishes a newsletter, maintains a library, and promotes the scholarship on the Middle East at all levels. Students are encouraged to utilize the Center’s many resources. The MES major is administered through the Interdisciplinary Studies Teaching Program (IASTP). The IASTP office provides information on all administrative aspects of the major, including advice on when and how to declare, fulfilling requirements, and timely program completion. The IASTP also distributes handouts related to the major. Academic advising, including planning a course of study to suit individual needs and interests, identifying a thesis topic and advisor, and career planning, is provided by the MES coordinating faculty advisor at the CMES in conjunction with a group of MES faculty advisors.

The MES major should not be confused with the major in Near Eastern Studies (NES), which emphasizes language and culture and excludes the study of the ancient Near East. Students interested in those fields should contact the Near Eastern Studies Department in 250 Barrows Hall, (510) 642-3757.

Lower Division Requirements. 1) NES 10, Introduction to the Near East (4 units). A survey course introducing the fundamentals of Middle Eastern civilization presented in a broad historical framework; 2) MES 10, Social Issues in Middle Eastern Studies (4 units). A lower division interdisciplinary course about contemporary social issues relating to the Middle East that treats regional and international questions such as: (1) the political economy of development in the Middle East; (2) identity issues, including ethnicity, nationality and religious revival; and (3) family and community affairs; or 3) History 12, Introduction to the Middle East (4 units). An introduction to historical developments in the Middle East from the rise of Islam to the present, including the significance of Islamic civilizations from a world historical perspective, the construction of the modern state system from the late Ottoman era through the period of British and French colonial rule, the newly independent states of the Middle East and the postcolonial period.

Language Requirement. All MES students must be able to demonstrate proficiency equivalent to four college-level semesters in a modern Middle Eastern language: Arabic, Hebrew, Persian, or Turkish. The first semester language course must be completed or be in the process of being completed at the time of admission to the major. The remaining three courses may be completed at any time before graduation. The language cannot be started in the senior year and finished in the post-graduation summer.

Upper Division Requirements. There are eight required upper-division courses, totaling no fewer than 30 units. They consist of: (A) three core courses; (B) four disciplinary concentration courses; and (C) a senior thesis. Important: With the exception of IASTP courses, no more than 19 units in three core courses may be taken from the same department.

Core Courses (3 courses). The core course requirement is intended to provide a broad introduction to the Middle East, encompassing geography and ethnography, history and cultures, and current political, economic and social developments. To satisfy this requirement, students must take three courses from the following list. These three courses must be taken in three different departments.

Disciplinary Concentration Requirement. In addition to the core courses, MES students must complete a four-course disciplinary concentration requirement in which they pursue an advanced study of a selected topic in Middle Eastern Studies following a particular disciplinary approach. Topics may focus on a specific region or a thematic problem, and may relate to religious and cultural studies, history, contemporary development and social change, urbanization, nation building, the impact of imperialism and colonialism on the Middle East among other topics. The concentration must be designed in consultation with the coordinating faculty advisor at the CMES and pre-approved by an MES staff advisor in the IASTP office. In order to ensure disciplinary depth, at least two of the four courses taken to fulfill the concentration requirement must be in the same department. The remaining two must be thematically related to the selected topic. Students may choose their concentration courses from the list of core courses above and from those courses indicated as at least 50% Middle East-related in the "Courses in Middle Eastern Studies" list available at the CMES each semester and posted on its web site: ias.berkeley.edu/iassap/cmescourses.asp.

Additional Course Suggestions. There are a number of additional courses that are relevant to the MES major insofar as they provide methodological, conceptual, or comparative perspectives that enrich and broaden a student’s program though they do not directly relate to the Middle East. These courses are recommended but do not fulfill any major requirements. A sampling of such courses follows:

Anthropology 158: Religion and Anthropology
Development Studies 100: History of Development and Underdevelopment
Economics 1171: Economic Development
Gender and Women’s Studies 141: Interrogating Global Economic Development
Geography 130: Natural Resources and Development
Science 126A: International Political Economy
Sociology 112: Sociology of Religion

In special cases, the MES coordinating faculty advisor will allow students to apply such courses toward the concentration requirement provided that the course in question is listed as at least 33% Middle East-related and that a research paper or other
The minor in Middle Eastern studies is designed to introduce students to the study of the modern Middle East, understood as comprising the Arab world, Turkey, Iran, and Israel through social science and humanistic disciplines. (Students interested in emphasizing language, archaeology and/or ancient civilizations should investigate minors in the Department of Near Eastern Studies.) The MES minor is interdisciplinary, the five upper division courses must be taken from at least two different departments. The study of modern Middle Eastern languages is encouraged; however, there is no language requirement for the MES minor, nor do language courses count toward the minor. The six courses taken to satisfy the MES minor must total 22 or more units. All courses must be taken for a letter grade. MES 97, 99, 197, and 199 may not be used to fulfill minor requirements. At least three of the upper-division minor courses must be completed at UC Berkeley. (All transfer courses must be approved by an advisor.) Students must achieve a minimum overall GPA of 2.0 in the courses used to satisfy minor requirements. Only one course may be double-counted with a major program. For further information, see the MES minor information sheet, pre-approved course list, and application available in 101 Stephens Hall.

Minor in Middle Eastern Studies

The minor in Middle Eastern studies is designed to introduce students to the study of the modern Middle East, understood as comprising the Arab world, Turkey, Iran, and Israel through social science and humanities disciplines. (Students interested in emphasizing language, archaeology and/or ancient civilizations should investigate minors in the Department of Near Eastern Studies.) The MES minor is interdisciplinary, the five upper-division courses must be taken from at least two different departments. The study of modern Middle Eastern languages is encouraged; however, there is no language requirement for the MES minor, nor do language courses count toward the minor. The six courses taken to satisfy the MES minor must total 22 or more units. All courses must be taken for a letter grade. MES 97, 99, 197, and 199 may not be used to fulfill minor requirements. At least three of the upper-division minor courses must be completed at UC Berkeley. (All transfer courses must be approved by an advisor.) Students must achieve a minimum overall GPA of 2.0 in the courses used to satisfy minor requirements. Only one course may be double-counted with a major program. For further information, see the MES minor information sheet, pre-approved course list, and application available in 101 Stephens Hall.

Upper Division Courses

109. Model Arab League. (3) Two hours of lecture per week, plus participation in the Model Arab League simulation. Must be taken on a passed/not passed basis. The Model Arab League is a simulation of the League of Arab States similar to the Model United Nations. Class meetings will be for familiarization of relevant political perspectives within the context of the Arab world. Students learn parliamentary procedure and to prepare resolutions. Each student is assigned to a committee and is responsible for participating in the development of the committee's resolution and its presentation at the Model Arab League. (SP)

130. Cross-Listed Topics. (1-4) Course may be repeated for credit. Prerequisites: Consent of instructor. This course is designed to accommodate cross-listed courses offered through other departments, the content of which is applicable to Middle Eastern Studies majors. Content and unit values vary from course to course. (F,SP)

140. Special Topics. (2) Course may be repeated for credit. Prerequisites: Consent of instructor. A short course designed to provide a vehicle to take advantage of short-term visiting colleagues coming to campus who have considerable expertise in areas of interest to Middle Eastern Studies. (F,SP)

150. Advanced Study in the Middle East. (4) Course may be repeated for credit. Three hours of seminar per week. Prerequisites: Consent of instructor. Advanced research in current issues of Middle Eastern Studies. Seminars will focus on specific areas or topics with appropriate comparative material included. A major research project is required as well as class presentations. Topics to vary from semester to semester. (F,SP)

190. Senior Thesis. (1-4) Individual conferences. Prerequisites: Senior standing, one year of language in the major, at least 15 upper-division units in the major, Near Eastern Studies 10. With the guidance of a faculty member of the program, the preparation and presentation of a senior thesis pertaining to the student's individual area of concentration within the Middle Eastern Studies major. Final paper required. Units determined on consultation with instructor. (F,SP)

H195A. Honors in Middle Eastern Studies. (4) Weekly discussion with faculty thesis advisor. The senior honors is a two-semester program. The thesis project begins with H195A. This semester consists of a research methods course in which students determine a thesis topic, review the relevant secondary literature, identify primary source materials, and prepare a substantive prospectus. The senior honors thesis is completed in the second semester of the program in H195B. Students intending on enrolling in 190, Senior Thesis, may take this course as well. (F,SP)

H195B. Honors in Middle Eastern Studies. (4) Weekly consultation with faculty thesis advisor. This course is the second of a two-semester honors program and culminates in the completion of a senior thesis. The thesis project begins with H195A, which must be successfully completed before enrollment in H195B. During this semester, an honors thesis of approximately 75 pages is completed under the direction of a faculty member appropriate to the student's interest. (F,SP)

198. Directed Group Study for Upper Division Students. (1-4) Course may be repeated for credit. One to four hours of directed group study per week. Must be taken on a passed/not passed basis. For further information, see the MES minor information sheet, pre-approved course list, and application available in 101 Stephens Hall. (1-4)

368 / Middle Eastern Studies
Military Officers’ Education Program (ROTC) (Special Studies)

Offices: See following listings for Aerospace Studies, Military Sciences, and Naval Science.
Chair: Advisory Committee on ROTC:
Prof. Philip T. Spieth

Adjunct Professors
David L. Bucky, M.A., Captain, U.S. Navy
Debra L. Roessler, M.S., Lieutenant Colonel, U.S. Army

Adjunct Associate Professors
Robert Miller, Ph.D., Major, U.S. Army Reserve
Sudley Mitchell, M.A., Lieutenant Colonel, U.S. Marine Corps

Adjunct Assistant Professors
Karl Brandt, B.S., Lieutenant, U.S. Navy
Amber Henson, B.S., Captain, U.S. Air Force
Melissa Hiler, M.S., Lieutenant, U.S. Navy
Vincent Lau, M.S., Captain, U.S. Air Force

Lecturer
Christopher C. Cangheii, B.A., Captain, U.S. Air Force

Program Overview

The Military Affairs Program, within the Division of Undergraduate and Interdisciplinary Studies (UGIS), comprises the three distinct military officers’ commissioning programs: Air Force ROTC, Army ROTC, and Naval ROTC. The purpose of the program is to integrate the educational offerings of the separate military services into the regular University curricula. In performing academic functions, the Military Affairs Unit operates the same as any other program within UGIS. Its military faculty members, though nominated by the three military services, are subject to the same selection process as other Berkeley faculty members, and the Academic Senate’s Committee on Courses must approve its curriculum. Military Affairs courses are open to all Berkeley students as well as to students from other East Bay colleges under cross-enrollment agreements or through UC Berkeley Extension.

Students interested in the Military Officers Education Program should go to military.berkeley.edu/about.html or consult the program advisers in the appropriate unit:
Department of Military Sciences: (510) 642-3374
Department of Naval Sciences: (510) 642-3551
Department of Aerospace Sciences: (510) 642-3572

Military Affairs
military.berkeley.edu

Lower Division Courses

1. Military Physical Fitness and Nutrition. (1) Three hours of physical training per week. Prerequisites: Consent of instructor. This course teaches the fundamentals of physical fitness and nutrition employed by the U.S. military to condition R.O.T.C. cadets for the physical demands they will face as military officers. The course consists of rigorous physical training under the supervision of military officers and noncommissioned officers. The goal of this course is to not only enhance one’s level of physical fitness, but to develop leadership qualities in the conduct and planning of physical fitness training. The course will include topics in leader responsibilities in fitness training, components of fitness, principles of exercise, physical fitness program development, phases of conditioning, environmental factors and nutrition. Physical training will include, but not be limited to: running up to five mile marches up to six miles with a pack, swimming, team sports, weight training, aerobic, and other activities designed to develop an individual’s components of fitness, teamwork, and aggressive competitive qualities. (F,SP) Lau, Miller, Mitchell

20. Evolution of Warfare. (3) Three hours of lecture per week. Progressive analysis of the evolution of warfare from the ancient world to the present. Emphasis placed on causes of continuity and/or change of methods, as well as the influence of economic, moral, political, and technological factors on strategic thought. (SP) Mitchel

Upper Division Courses

121. The Evolution of American Warfare: 1900-1980. (3) Three hours of lecture per week. Military history of World War I and II, survey of modern revolutionary warfare. Infiltration of modern technology on American military organizations. The development of a global military strategy, imprint of the social fabric of the nation on the military as the United States evolved into a world power. Examination of historical theorists on revolutionary warfare in its contemporary form. (SP) Staff

123. Korea, Vietnam, and the American Military Experience. (3) Three hours of lecture per week. This course examines recent military experience of the United States in terms of the traditional American way of preparing for and waging war with emphasis on the strategy and tactics used in the Korean and Vietnam wars. (F) Staff

144. Military Law, Ethics, and Professionalism. (2) Two hours of lecture per week. Topics to be analyzed and discussed include the court-martial system, the punitive articles of the Uniform Code of Military Justice, fundamental rights of accused persons, rules of evidence, punishment, administrative boards, and the Law of War. Survey of ethical and professional issues of the military. (SP) Staff

145A. National Security Forces in Contemporary American Society. (3) Three hours of seminar per week. Prerequisites: Permission of instructor and consent of instructor. Conceptually examines the Armed Forces as an integral element of American society. Examines contemporary issues in civil-military relations and the nature and political environments in which U.S. defense policy is formulated and implemented. (F) Jensen

145B. Preparation for Active Duty. (3) Three hours of lecture and for cadets only; a two-hour advanced leadership laboratory per week. Prerequisites: Upper division standing and consent of instructor. This course focuses on commissioning of cadets and their transition to active duty. The primary focus of instruction is officer professionalism, leadership, and professionalism. Topics for discussion include the military justice systems, military ethics, core values, military professionalism and current issues affecting the Air Force, and a general introduction to base functions designed to ease the transition to active duty. The course also focuses on the role of the military in society and calls for active student participation in class discussion. In addition, the course includes projects, visits to Air Force bases, and orientation flights. (SP) Staff

Completion of the program to earn an Air Force commission requires enrollment during each semester in a specified course in Aerospace Studies or Military Affairs. The normal sequence for the four-year program is as follows: AS 1, AS 2A, AS 2B, AS 135A, AS 135B, MA 145A, MA 145B. Students enrolled in the two-year program must take only the upper division courses. All courses count for credit.

Aerospace Studies courses are open to all University students. Students from other institutions may participate in the AFROTC program through cross-enrollment arrangements or through University Extension.

For further information on enrollment requirements and procedures, contact the department staff at (510) 642-3572.

Lower Division Courses

1. The U.S. Air Force and National Security. (1) One and one-half hours of lecture per week. An introductory survey of the U.S. Air Force. Explores evolutionary factors affecting the nature and control of the military. Examines current U.S. defense needs and the Air Force in terms of theory, function, mission, and organization. Major commands are examined individually. (F) Henson

2A. The Evolution of U.S. Air Force Air and Space Power. (1) Course may be repeated for credit. One hour of lecture per week. Formerly 2. This course is designed to examine the general aspects of air and space power through a historical perspective. Using this perspective, the course covers a time period from the first balloons and dirigibles to the space-age global positioning systems of the Persian Gulf War. Historical examples are provided to demonstrate the development of Air Force capabilities (competencies) and missions (functions) to demonstrate the evolution of what has become today’s air and space power. (F) Henson

†Recipient of Distinguished Teaching Award
*Professor of the Graduate School

Military Officers’ Education Program (ROTC) / 369
28. The Evolution of U.S. Air Force Air and Space Power. (1) One hour of lecture per week. This course is designed to examine the general aspects of air and space power in historical perspective. It examines several fundamental truths associated with war in the third dimension; e.g., principles of war and tenets of air and space power. As a whole, this course provides an understanding of the effects of change on the development of military and educational leaders. The core of this course is to provide cadets with a basic understanding of the basic elements of air and space power, for an institutional, doctrinal, and historical perspective. (SP) Henson

24. Freshman Seminars. (1) Course may be repeated for credit as topic varies. One hour of seminar per week. The Berkeley Seminar Program has been designed to provide new students with the opportunity to explore an intellectual topic with a faculty member in a small-seminar setting. Berkeley Seminars are offered in all campus departments, and topics vary from department to department and semester to semester. (SP) Henson

Upper Division Courses

100. Leadership Laboratory. For Air Force cadets only. Two hours of laboratory per week. Must be taken on a passed/not passed basis. Prerequisites: Consent of instructor. Training session supports cadet classroom training. It consists of basic military knowledge and practical command and staff leadership experiences in preparation for active duty as military officers. This course provides leadership experiences for senior cadets and provides training in basic military knowledge and skills to younger cadets. The main focus of this training is on proper uniform wear, grooming, and appearance requirements, physical fitness, knowledge of the history of military customs and courtesies, as well as a working knowledge of military drill and ceremony. This course is totally cadet-centered to maximize the leadership experience and prepare cadets to make an easy transition to their active duty assignments. (F, SP) Lau

135A-135B. Air Force Leadership Studies. (3:3) Three hours of lecture/discussion per week. Prerequisites: 135A is a prerequisite to 135B or consent of instructor. This course is a study of leadership, management fundamentals, professional knowledge, and communication skills required of an Air Force junior officer. Lecture, test, case studies, and class discussion will be used to examine all aspects of leadership including counseling, mentoring, empowering, problem-solving, accountability and authority. Students will develop upon basic written and oral communications skills primarily through written assignments and oral presentations. (R. Lau)

Professional Courses

442. Light Aircraft Operations. (3) Three hours of lecture per week. This course prepares students to take the Federal Aviation Administration Private Pilot Knowledge Exam. Topics of study include the principles of flight, federal aviation regulations, the flight environment, aircraft systems and performance, basic meteorology, navigation, aviation physiology and comprehensive flight planning. (SP) Caughell

Military Science (Army ROTC)

Department Office: Hearst Gymnasium, (510) 643-7505
armyrotc.com/edu/univcaberkeley

The Army Officer Education Program offers a variety of credit courses focused on the study of the military as an institution, adventure training opportunities, and a program of laboratory work in practical military skills. The program provides an opportunity for future military leaders to develop leadership and communications skills. It also emphasizes various professional leadership competencies and insights. These courses are designed to maximize cadet participation, inspire intellectual curiosity, and stimulate self-study. Upon completion of the course, cadets should be prepared to assume responsibilities as an active duty commissioned officer in the Armed Forces. The Army ROTC Advanced Course is designed to teach all knowledge and skills needed for commissioning as a new second lieutenant, and to establish a sound foundation for a career as a commissioned Army officer. The content and methods of the Advanced Course are designed to give cadets the knowledge and skills to perform the duties of an active duty commissioned officer. This course is totally cadet-centered to maximize the leadership experience and prepare cadets to make an easy transition to their active duty assignments. (F, SP) Lau

Military Science courses are open to all University students. Students from other area institutions may participate in the Army ROTC program through cross-enrollment arrangements or through University Extension.

For more information concerning Army ROTC or the Department of Military Science, contact the staff at Hearst Gymnasium or call (510) 642-3374.

Lower Division Courses

1. Leadership Laboratory. The laboratory may be taken for eight semesters. Two hours of instruction and practical application in leadership and associated military skills. Must be taken on a passed/not passed basis. The instruction includes organization and management of military units, physical training, drill and ceremonies, land navigation techniques, survival skills, and extensive first aid training. (F, SP) Staff

2. Foundations of Officerhood. (1) One hour of lecture/discussion per week. The purpose of this course is to introduce the student to issues and competencies that are central to a commissioned officer's responsibilities. These initial lessons establish a framework for understanding officerhood, leadership, and Army values. Additionally, the semester addresses "life skills" including fitness and time management. This course is designed to give accurate insight into the Army profession and the officer's role within the Army and provides the information necessary for further leadership development. This course is structured in modules. There are five modules containing 15 one-hour (50-minute) lessons, as follows:

Module 1—The Army Profession: Officerhood (what officers/leaders do, customs/courtesies)
Module 2—Personal Development (time/personal management)
Module 3—Physical Well-Being (physical fitness, stress management)
Module 4—Leadership (definition, AOR model, Army Be-Know-Do-model, character, and competence)
Module 5—Values and Ethics (moral vs. ethics, ethical decision making, Army (Institutional) Values) (F) Roessler

3. Basic Leadership. (1) One hour of lecture/discussion per week. The purpose of this course is to establish a foundation of basic leadership fundamentals. Topics covered include problem solving, communications, briefings, and presentations, effective writing, goal setting, techniques for improving listening and speaking skills and an introduction to counseling. This course is structured in modules. There are four modules containing 14 one-hour (50 minute) lessons as follows:

Module I—Communications
Module II—Personal Development
Module III—Physical Well-Being
Module IV—The Army Profession: Officerhood. (SP) Roessler

Upper Division Courses

100. Individual Leadership Studies. (2) Two hours of lecture/discussion per week. The purpose of this two credit hour course is to develop an understanding of self, self-confidence, and individual leadership skills. Through experiential learning activities, students develop problem solving and critical thinking skills, and apply communication, feedback, and conflict resolution skills. This course is structured in modules. There are four modules encompassing 30 one-hour (50 minute) lessons as follows:

Module I—Enhanced Skills Training Program—This web-based program assesses individual student strengths and weaknesses in Army ROTC and designs a program of self study to improve individual weak areas to meet or exceed, minimum capabilities.
Module II—Physical Well Being—Nutrition, life style, stress management, techniques, and issues
This course begins with a series of lessons designed to enable cadets to make informed career decisions as they prepare their accessions documents. The next lessons concentrate on Army operations and training management, communications and leadership skills, and support the beginning of the final transition from cadet to lieutenant. The course enables cadets to attain knowledge and proficiency in several critical areas to operate effectively as an Army officer, including the Army’s training management system, coordinating activities with staff, and individual counseling skills. At the end of this semester, cadets will understand the fundamental skills, attributes, and abilities to operate as competent leaders and confidently shoulder the responsibilities entrusted to them. This course is structured in modules. There are six modules, as follows:

Module 1—The Army Profession: Officership.
Module 2—The Army Profession: Army Operations.
Module 3—Communications.
Module 4—Personal Development.
Module 5—Physical Well-Being.
Module 6—Leadership. (F) Roesler

141. Leadership and Management. (3) Three hours of lecture per week. Prerequisites: Consent of instructor. This course is designed as the final step in preparing cadets to become commissioned officers. A variety of pertinent topics are covered including a case study analysis of military law and practical exercises on establishing leadership and demonstrating their leadership skills. (F, SP) Miller

Naval Science (Naval ROTC)
Department Office: 152 Hearst Gymnasium, (510) 642-3551, navyrotc.berkeley.edu

The Department of Naval Science offers several programs for men and women leading to commissions in the U.S. Navy or U.S. Marine Corps. Naval Science courses are open to all university students or may be taken through University Extension.

Students enrolled in one of the four-year Naval ROTC programs must attend four to six-week summer training cruises and participate in four to six-week summer training at the Naval Science Institute in Newport, Rhode Island, before the start of their junior year. Graduates of the Naval Science Institute will receive full payment of tuition, fees, and a $350- and $400-per-month stipend during their junior and senior years respectively. One summer training cruise is required. Upon graduation, the student receives a commission in the Navy or Marine Corps with a four-year active duty obligation. Application deadline is normally March 1 of the sophomore year.

For additional details, call (510) 642-3551.

1. NROTC Four-Year Scholarship Program: Nationwide competition open to academically and physically qualified men and women who will be entering their junior year (or their third year in a five-year curriculum). The age limit is the same as above. U.S. citizenship is required. Candidates attend the Naval Science Institute in Newport, Rhode Island, during the summer before their junior year. Graduates of Naval Science Institute enroll in the NROTC unit as juniors and receive uniforms, Naval Science books, and a $350- and $400-per-month stipend during their junior and senior years, respectively. One summer training cruise is required. Upon graduation, the student receives a commission in the Navy or Marine Corps with a three-year active duty obligation. Application deadline is normally March 1 of the sophomore year.

For further information, call (510) 642-3551.

Lower Division Courses

1. Introduction to Naval Science. (2) Two hours of lecture/discussion per week. This curriculum provides guidelines for introducing students to the organization of the Department of Naval Science, the long-held customs and traditions of the service, basic leadership, ethics and character development, the duties of a junior officer, and basic information concerning shipboard procedures and safety. It is the intent of this course to stimulate the students’ interest for study and investigation in future courses. (F) Buckey

2. Sea Power and Maritime Affairs. (2) Two hours of lecture per week. Prerequisites: Consent of instructor. Traces the U.S. historical evolution of sea power, its military strategies and theories and how these apply to current trends. Examines the roles of the Marine’s and the former Soviet Navy’s impact on sea power policy formulation. (SP) Miller

3. Leadership and Management I. (3) Three hours of lecture/discussion/semester per week. This course will...
Molecular and Biochemical Nutrition
(North College of Natural Resources, Interdepartmental Graduate Programs)

Office: 117 Morgan Hall, (510) 643-2863
mnb.berkeley.edu
Chair: Joseph Napoli, Ph.D.

Professors
Bruce N. Ames, Ph.D. (Molecular and Cell Biology)
Leonard F. Biedlantes, Ph.D. (Nutritional Science and Toxicology)
John E. Casada, Ph.D. (Environmental Science, Policy, and Management)
Bentjo O. deLumen, Ph.D. (Nutritional Science and Toxicology)
Sharon E. Fleming, Ph.D. (Nutritional Science and Toxicology)
John G. Forte, Ph.D. (Molecular and Cell Biology)
Marc Hellestein, M.D., Ph.D. (Nutritional Science and Toxicology)
Isao Kubo, Ph.D. (Environmental Science, Policy, and Management)
Joseph L. Napoli, Ph.D. (Nutritional Science and Toxicology)
Z. I. Sabry, Ph.D. (Public Health)
George Sensabaugh, D.Crim. (Public Health)
Barry Shene, Ph.D. (Nutritional Science and Toxicology)
Marty M. Smith, Ph.D. (Public Health)
Hei Sook Sul, Ph.D. (Nutritional Science and Toxicology)
Fernando E. Viteri, M.D., B.Sc. (Nutritional Science and Toxicology)
Kenneth J. Carpenter, Ph.D. (Emeritus) (Nutritional Science and Toxicology)
Jarett C. King, Ph.D. (Emeritus) (Nutritional Science and Toxicology)
Sylvia Lane, Ph.D. (Emeritus) (Agricultural and Resource Economics)
Angela C. Little, Ph.D. (Emeritus) (Nutritional Science and Toxicology)
Sheldon Margen, M.D. (Emeritus) (Public Health)
John B. Neltand, Ph.D. (Emeritus) (Molecular and Cell Biology)
Alexander V. Nichols, Ph.D. (Emeritus) (Molecular and Cell Biology)
Leslee Packer, Ph.D. (Emeritus) (Molecular and Cell Biology)
Paola Timiras, Ph.D. (Emeritus) (Molecular and Cell Biology)
Mary Ann Williams, Ph.D. (Emeritus) (Nutritional Science and Toxicology)

Associate Professors
Barbara Abrams, Dr. P.H. (Public Health)
Nancy K. Amy, Ph.D. (Nutritional Science and Toxicology)
Gregory W. Aponte, Ph.D. (Nutritional Science and Toxicology)
George Rang, Ph.D. (Nutritional Science and Toxicology)
Christopher Vulpe, Ph.D. (Nutritional Science and Toxicology)
Susan M. Gace, Ph.D. (Emeritus) (Nutritional Science and Toxicology)

Adjunct Professors
Ronald M. Kraus, M.D. (Nutritional Science and Toxicology)
Robert O. Ryan, Ph.D. (Nutritional Science and Toxicology)
Elizabeth C. Theil, Ph.D. (Nutritional Science and Toxicology)

Program Overview
The Graduate Group in Molecular and Biochemical Nutrition (formerly the Graduate Group in Nutrition) offers a degree program that focuses on the interaction of nutrition and metabolism. Graduate research may be focused at any level of integration from molecules and cells to laboratory animals and humans. The program has special strengths in cellular and molecular nutrition and in human nutrition and obesity. The group's faculty come from a variety of departments at UC Berkeley including Nutritional Science and Toxicology and Molecular and Cell Biology. Additional adjunct faculty from the Hospital-Oakland Research Institute are also part of the group.

For admission to the Ph.D. program, students should have a bachelor's degree or its equivalent in nutritional science or related fields, including biochemistry and molecular biology, chemistry, or any other biological sciences. Candidates for the Ph.D. degree are required to complete a sequence of core graduate nutrition courses and the Ph.D. oral qualifying examination. In addition, all students must gain experience in teaching through their service as a graduate student instructor. Students seeking further information concerning matters such as curricula, admission, and financial support should visit the program web site at mnb.berkeley.edu.

For undergraduate programs in nutrition, go to nutrition.berkeley.edu.

Molecular and Cell Biology
(College of Letters and Science)

Department Office: 497 Life Sciences Addition, (510) 642-6252
Undergraduate Affairs Office: 2083 Valley Life Sciences Bidg. (VLSB), (510) 643-8891
Graduate Affairs Office: 299 Life Sciences Addition, (510) 642-5252
mcb.berkeley.edu
Chair: Richard Harland, Ph.D.
Vice Chair: Mark Schilling, M.D., Ph.D.

Professors
Thomas C. Alber, Ph.D. Massachusetts Institute of Technology. Structure/function correlates in tubulocins, molecular recognition and signaling
*Bruce N. Ames, Ph.D. California Institute of Technology. Mechanisms of aging, mitochondrial decay in aging, oxidants and antioxidants in DNA damage, micronutrient deficiencies, DNA damage, chronic inflammation, and cancer
*Georgiana Barnes, Ph.D. University of California, Berkeley. Microtubule cytoskeleton and cell cycle controls
Steven K. Beckendorf, Ph.D. California Institute of Technology. Molecular biology of development
James M. Berger, Ph.D. Harvard University. Structural and mechanistic biochemistry of macromolecular assemblies and machineries that mediate translation of DNA replication, chromosome, and superstructure
†Carolyn Bertozzi, Ph.D. University of California, Berkeley. Molecular basis of cell surface interactions
Michael R. Botchan, Ph.D. University of California, Berkeley. Molecular and cell biology
Mary Beth Burns, Ph.D. University of Texas, Austin. Cell biology of photoreceptors
Carlos J. Bustamante, Ph.D. University of California, Berkeley. Structural characterization of nucleo-protein assemblies
Richard Calender, Ph.D. Stanford University. Molecular genetics of viruses
W. Zachues Canoe, Ph.D. Stanford University. Cell and developmental biology
Steven Chiu, Ph.D. University of California, Berkeley. Molecular physics
Thomas W. Cline, Ph.D. Harvard University. Sex determination in Drosophila
Kathleen Collins, Ph.D. Massachusetts Institute of Technology. Telomere structure, function, and replication
Yang Dan, Ph.D. Columbia University. Information processing by neuronal circuits
Jennifer A. Doudna, Ph.D. Harvard University. Ribozymes and RNA machines
David G. Drubin, Ph.D. University of California, San Francisco. Actin and microtubule cytoskeletons in yeast and mammalian cells
Peter H. Duesberg, Ph.D. University of Frankfurt. Genetic structure of retroviruses
†Gary L. Firestone, Ph.D. University of Iowa. Molecular genetics
†John G. Gerhard, Ph.D. University of California, Berkeley. Developmental biology
†Donald A. Glaser, Ph.D. California Institute of Technology. Psychophysics of vision
The Undergraduate Major

mcberkeley.edu/undergrad

The undergraduate major in molecular and cell biology is composed of two plans that encompass the diversity of scientific interests of the department's faculty. Although Plan I has a more molecular and structural component and Plan II has a more cellular and systems orientation, the perspectives and content of the two plans overlap considerably. Students majoring in either plan have been highly successful in entering graduate or medical school and in other science- and health-related careers.

Details on the MCB major, its requirements and policies, as well as resources for students, are available in the MCB Undergraduate Affairs Office, 2083 Valley Life Sciences Building.

Lower Division Requirements

Math 1A-1B; Chemistry 1A, 3A/AL-3B (or Chemistry 1A-1B, 112A-112B); Biology 1A/1AL-1B; and Physics 8A-8B. Total lower division units: 37-42.

Upper Division Requirements—Plan I

• Biochemistry and Molecular Biology (BMB): MCB C100A, 100B, 110, 140/148, 110L, BMB elective.

• BMB Biological Chemistry: Chemistry 112A-112B, Chemistry C130-130B, Chemistry 135, MCB 110L, MCB 111/130/140.

• Genetics, Genomics, and Development (GG&D): MCB C100A, 110, 140, 140L, GG&D elective A, and elective B.

• Immunology (IMM): MCB C100A, 110, 140/C142, 150, 150L, elective.

Upper Division Requirements—Plan II

• Cell and Developmental Biology (CDB): MCB 102, 130, 131/136/C142, 130L, three CDB electives.

• IMM—Infectious Disease: MCB 102, 142, 150, 150L, elective A, elective B.

• Neurobiology: MCB 102, 130, 160, 160L/163, elective A, elective B.

Honor's Program

The MCB honors program offers exceptional senior students recognition for outstanding academic achievement and the opportunity to conduct original research under the guidance of an MCB faculty member. To graduate with honors in the major, students must: 1) complete at least two semesters of upper division credit; 2) have at least a 3.5 grade-point average in all MCB major requirements, OR 3.5 in all upper division MCB courses; 4) present their research in an approved forum, such as an MCB symposium, the Undergraduate Poster Session, or other science communication forums, and 5) write an honors thesis approved by an MCB faculty sponsor. Additional information on H196 and receiving honors is available in the Undergraduate Affairs Office.
Graduate Program

The department offers a program of graduate study leading to the Ph.D. in molecular and cell biology. This program is based upon general research methods and concepts of the study of the molecular structures and processes of cellular life. The training is intellectually focused, but at the same time, it offers a wide opportunity for varied disciplinary specialization. Undergraduate preparation for admission to the program should correspond to one of the two plans of the department, majoring in either Molecular and Cell Biology or the Department of Molecular, Microbial, and Entomological Sciences. All students working for the Ph.D. will be required to serve as a graduate student instructor for two semesters during the first three years. Students seeking details about such matters as financial aid, housing, admission, curriculum, and sources of financial support should go to mcb.berkeley.edu or contact the department by mail at Graduate Affairs Office, Department of Molecular and Cell Biology, University of California at Berkeley, 259 Life Sciences Additon #3202, Berkeley, CA 94720-3202. E-mail: mcbga@berkeley.edu

Research Facilities

The Cancer Research Laboratory is a research institute on the Berkeley campus that carries on a research, teaching, and service program designed to foster interdepartmental participation in cancer research. The Department of Molecular and Cell Biology faculty are also members of the Cancer Research Laboratory. The central core program represents a multidisciplinary approach to an understanding of the mechanism of neoplastic transformation using a variety of systems. Graduate student and postdoctoral research programs are supported in various areas of tumor biology, biochemistry, cell biology, endocrinology, genetics, immunology, oncology, and tumor virology. The Cancer Research Laboratory also operates four research facilities: 1) Flow Cytometry Facility for fluorescence activated cell sorting and analysis; 2) Molecular Imaging Facility with two-photon microscopes for image analysis; and 3) Proteomic Mass Spectrometry Facility; 4) Immunology DNA Microarray Consortilum; and 5) Gene Targeting Facility for construction of transgenic and chimeric mice. Instrumentation in the facilities is operated by highly trained staff, and training is offered in methods and techniques associated with each facility. For more information, go to biogoy.berkeley.edu/eml.

Other specialized research facilities include those for x-ray crystallography, nuclear magnetic resonance studies, large-scale fermentation, tissue culture, and DNA sequencing.

Division of Biochemistry and Molecular Biology

Lower Division Courses

11. Of Molecules and Man: A View for the Layman. (3) Students will receive no credit for 11 after taking Biology 1A, 111, 112. Three hours of lecture and one hour of discussion per week. Examination of the biological mechanisms that underlie normal functions and activities of living organisms. (SP) Alper

Upper Division Courses

C100A. Biophysical Chemistry: Physical Principles and the Molecules of Life. (4) Chemistry 102B will restrict credit if completed prior to Chemistry 130. C110, or C100A. Three hours of lecture and one hour of discussion per week. Examination of the physical principles that underlie normal functions and activities of living organisms. (SP) Staff

C100B. Biochemistry: Pathways, Mechanisms, and Regulation. (3) Students will receive no credit for 100 after taking 102 and no credit after taking 102. Two hours of lecture and one hour of discussion per week. Prerequisites: C100A. Formerly half of 100. Bioenergetics, metabolic pathways, and regulation of metabolism; the structure and function of subcellular organelles; and genetic and degradative capacity of the constituent molecules (DNA, RNA, amino acids, sugars, nucleotides) and cofactors of the major biological macromolecules. Diseases that are linked to metabolic disorders. This course will introduce the student to the molecular basis of genetics and gene expression. (SP) Staff

C101. Bacterial Pathogenesis. (3) Three hours of lecture per week. Prerequisites: C100A/Chemistry C130 or 102 or consent of instructor. This course for upper division and graduate students will explore the molecular and cellular basis of bacterial virulence. The course will cover model microorganisms which illustrate mechanisms of pathogenesis. Most of the empirical work is based on bacterial pathogenesis, but there will be some discussion of viral and protozoan pathogens. There will be an emphasis on experimental approaches. The course will also include some aspects of molecular genetics and physiology (membrane transport, resistance to infection, and the cell biology of host-parasite interactions. Also listed as Public Health C102 and Plant and Microbial Biology C103. (SP) Staff

110. General Biochemistry and Molecular Biology. (4) Three hours of lecture and one hour of discussion per week. Prerequisites: (110 may be taken concurrently). Plan 1 Emphasis (1BM) majors should take 100B prior to 110. Molecular biology of prokaryotic and eukaryotic cells and their viruses. Mechanisms that underlie normal functions and activities of living organisms. (F,SP) Staff

111. Introduction to Structural Biology. (3) Three hours of lecture per week. Prerequisites: C100A/Chemistry C130. This course for upper division majors will teach principles of the structure and function of the macromolecular structures and outline basic experimental methods for conformational studies. The classical problems of structural biology will be discussed. Molecular, genetic, and structure-function analyses of microbial cell cycles, adaptive responses, metabolic capability, and macromolecular structures will be emphasized. (SP) Staff

C112. General Microbiology. (4) Three hours of lecture and one hour of discussion per week. Prerequisites: C110 or consent of instructor. formerly half of 102. This course will introduce the student to the molecular basis of genetics and gene expression. (SP) Staff

C112L. General Microbiology Laboratory. (2) Four hours of laboratory and one hour of discussion per week. Prerequisites: C112 or consent of instructor. formerly half of 102. This course will introduce the student to the molecular basis of genetics and gene expression. (SP) Staff

113. Applied Microbiology and Biochemistry. (2) Three hours of lecture per week. Prerequisites: C100A (may be taken concurrently). Prerequisites: C100A/Chemistry C130 or 102 or consent of instructor. This course will cover fundamental microbial processes and single-cell protein production. (SP) Staff

C114. Introduction to Comparative Virology. (4) Three hours of lecture per week. Prerequisites: Introductory chemistry (1A or 1B equivalent) and introductory biology (1A-1B equivalent) and general chemistry (100 or equivalent—preferably completed but may be taken concurrently). Viruses will be considered as infectious agents of bacteria, plants, and animals (vertebrates and invertebrates). Several families of viruses will be compared with respect to biochemical, structural and morphological properties, and
115. Molecular Biology of Animal Viruses. (2) Two hours of lecture per week. Prerequisites: Upper division biology courses, matrix: C10A/Chemistry C13B or C112 or equivalent. Structure, reproduction, mutations, and host cell interactions (including pathogenesis) of animal viruses. This upper division and graduate course will survey the strategies that viruses use to propagate in eukaryote cells, with an emphasis on vertebrate systems and disease-causing viruses. We will also discuss host mechanisms of defense against viruses and the strategies that students should additionally enroll in 215. 115/215 are taught concurrently. (SP)

C116. Microbial Diversity. (3) Three hours of lecture per week. Prerequisites: Upper division standing, 112 or consent of instructor and organic chemistry (may be taken concurrently). Formerly 116. This course for upper-division and graduate students will broadly survey myriad types of microbial organisms, both prokaryote and eukaryote, using a phylogenetic framework to organize the concept of “biodiversity.” Emphasis will be on the evolutionary development of the many biochemical themes, how they mold our biosphere, and the organisms that affect the global biochemistry. Molecular mechanisms that occur in different lines will be considered to illustrate fundamental biological strategies. Graduate students additionally should enroll in C216, Microbial Diversity Workshop. Also listed as Plant and Microbial Biology C116. (SP)

Graduate Courses

200. Advanced Biochemistry and Molecular Biology. (4) Three hours of lecture and one hour of discussion per week. Prerequisites: C101A/Chemistry C130, 100B, 112, or equivalent. General course for first-year graduate students. Recent advances in the study of structural, functional, and genetic characteristics of prokaryotic and eukaryotic cells and organelles, macromolecular syntheses, regulation of gene expression, chromosome organization, cell signaling, proliferation, and differentiation. Admission to the course requires formal consent of the instructors, except for MCB graduate students and graduate students in the laboratories of MCB faculty. Enrollment is restricted to 45. Auditors are not permitted in the discussion sessions. (F)

206. Physical Biochemistry. (3) Three hours of lecture per week. Prerequisites: Year courses in organic chemistry and general biology; 100 recommended. Application of modern physical concepts and experimental methods to the analysis of the structure, function, and interaction of large molecules of biological interest. (F)

C209. Dietary Determinants of Cancer, Heart Disease, and Aging. (3) Three hours of lecture per week. Formerly C210. The influence of diet on DNA damage, cancer, and aging will be discussed with an emphasis on micronutrient deficiencies as a major contributor to DNA damage, cancer, and aging. The influence of diet on atherosclerotic heart disease will be covered with an emphasis on the role of dietary constituents proposed to have either toxic or preventive effects in the artery wall. Readings will consist of papers from the literature. Also listed as Nutritional Science and Toxicology C210. (SP)

210X. Foundations of Biochemistry and Molecular Biology. (1) One hour of discussion per week. Prerequisites: Consent of instructor; 110 must be taken concurrently. 100 or equivalent; Chemistry 130A,130B recommended or equivalent. General course for first-year graduate students (except those in MCB laboratories) who desire more advanced molecular biology; biochemical macromolecules; DNA replication, recombination, and repair; chromosome organization and mechanics; transcription, gene regulation; protein synthesis, intracellular protein trafficking; molecular basis of disease, defense, action, signal transduction mechanisms, cell cycle control; modern methods. (F)

211. An Introduction to Structural Biology and Physical Biochemistry. (4) Three hours of lecture and one hour of discussion per week. Prerequisites: Consent of instructor. This course is for Molecular and Cell Biology graduate students. It will teach principles of protein and nucleic acid structure and outline basic experimental methods for conformation studies. The classical problems of structural biology, as well as new approaches and methods, will be emphasized. Courses 111 and 211 are taught concurrently. Students enrolled in 211 will also be required to attend a weekly discussion section and to prepare a mini-grant proposal. (SP)

C214. Protein Chemistry, Enzymology, and Bioorganic Chemistry. (3) Three hours of lecture per week. Prerequisites: Graduate standing or consent of instructor. The topics covered will be chosen from the following: protein structure, denaturation, and folding; RNA catalysis; protein-protein and protein-nucleic acid interactions; enzyme kinetics and mechanism; catalytic antibodies. The instructor will be a student in chemistry, biochemistry, and molecular cell biology. Also listed as Chemistry C230. (SP)

215. Molecular Biology of Animal Viruses Workbook. (1) One hour of workshop per week. Prerequisites: Graduate standing; C101A/Chemistry 130b, 100B, 112, or equivalent. Each of instructors 115 should be taken concurrently. This workshop for graduate students will parallel 115 which should be taken concurrently. Emphasis in the workshop will be on the review of research literature as presented in the course, the recent professional literature. A formulation of a seminar and/or paper relevant to this topic will be required. (SP)

C216. Microbial Diversity Workshop. (1) One hour of workshop per week. Prerequisites: Graduate standing; 112 or consent of instructor and organic chemistry (may be taken concurrently). This workshop for graduate students will parallel 116, Microbial Diversity, which should be taken concurrently. Emphasis in the workshop will be on the review of research literature as presented in the course, the recent professional literature. A formulation of a seminar and/or paper relevant to this topic will be required. (SP)

217C. Selected Topics in Biochemistry and Molecular Biology. (1) Course may be repeated for credit with change in content. Three hours of lecture per week for five weeks. Prerequisites: Consent of instructor. Formerly 217. Recent advances. Topics change each year. 217A, 217B, 217C are three sections of this course. Each portion of the course is taught in tandem and may be taken individually. (F,SP)

218. Research Review in Biochemistry and Molecular Biology. Course may be repeated for credit. Two hours of seminar per week. Must be taken on a satisfactory/unsatisfactory basis. Prerequisites: Consent of instructor. Review of current literature and discussion of original research. (F,SP)

218A. Bacterial Viruses. (2) Initiation of DNA replication, the regulation of transcription at the initiation and termination stages, DNA packaging, interference between viruses, molecular cloning, and the heat shock response. (F,SP) Calendar


218G. Mycobacterial Development. (2) Review of current literature and discussion of original research. Zuzman

218H. Protein Synthesis in Bacteria and Mammals. (2) The molecular mechanisms of protein synthesis in bacterial and human cells. Specific areas of interest include the structure and function of the ribosome and the regulation of protein synthesis. (F,SP) Case

218J. Advanced 20th Century Perspectives on Cancer Cell Genetics. (2) Prerequisites: Consent of instructor. Transduction and reviews of research literature in the regulation of transformation by oncogenic retroviruses as models for natural carcinogenesis, including a critical review of the current research. Duesberg

218K. Channel-Forming Membrane Proteins. (2) Structure, functional properties, and assembly of proteins that form nonspecific and specific passive diffusion channels, as well as active transport apparatus, in bacterial membranes. Kikloyd

218M. Chemical Biology and Enzymology. (2) Topics at the interface of chemistry and biology with a particular focus on mechanisms of enzyme catalysis. (F,SP) Marletta

218N. Eukaryotic Transcriptional Control. (2) Nucleic acid and protein components involved in regulating promoter and transcription factors. Kane

218P. Physical Optics and Crystallography. (2) A combination of didactic presentations and informal discussions of methods and theory in physical optics and diffraction, as applied to crystallography of biological macromolecules. Emphasis on high resolution cryo-electron microscopy and image reconstruction, as well as study of the development of suitable background. Glaser

218R. The Protein Folding Problem. (2) Protein structure, stability, design, and the pathway of protein folding. Marqusee

218S. Cryo-Electron Microscopy of Macromolecules. (2) Structure-function studies of the cytoskeleton and large molecular machines by cryo-electron microscopy and image reconstruction. (F,SP) Rogers

218T. Post-transcriptional Control in Saccharomyces Cerevisiae. (2) Prerequisites: Consent of instructor. Poly (A) tail recognition by translation and degradation enzymes in the yeast cell. Sach

218U. Protein Folding and Stability. (2) The connection between the sequence of a protein and its three-dimensional structure. (F,SP)

218V. Biophysics of Macromolecule Transport Across Membranes. (2) (F,SP) Krantz

218W. Enzyme Catalysis. (2) Fundamental aspects of enzyme catalysis, as probed by kinetic, spectroscopic, and molecular biological approaches. Klinnman

219. Research Review in Biochemistry and Molecular Biology. Course may be repeated for credit with consent of instructor. Two hours of seminar per week. Must be taken on a satisfactory/unsatisfactory basis. Prerequisites: Consent of instructor. Review of current literature and discussion of original research. (F,SP)

219D. DNA Enzymology. (2) Prerequisites: Consent of instructor. Enzymology of DNA repair, replication, restriction, recombination, and methylation. Linn

219F. Eukaryotic Gene Expression. (2) Prerequisites: Consent of instructor. Processing of messenger RNA in interphase and the control of gene expression in eukaryotes. Tjian

219H. Molecular and Cell Biology of Listeria monocytogenes Pathogenesis. (2) Discussion of recent research on the genetics, cell biology, and immunology of the model facultative intracellular bacterial pathogen, Listeria monocytogenes. Portnoy

219J. Structure and Function of RNA. (2) RNA structure, folding, and function. Specific topics include ribozyme mechanisms, RNA-mediated translation initiation, and protein targeting and secretion. (F,SP) Doudna

219N. Chemotaxis. (2) Prerequisites: Consent of instructor. Bacterial chemotaxis as a model sensory system. D. Kosiba

219Q. Structural Biology of Molecular Machines. (2) Geometric and physical studies of protein machines, focused on protein-nucleic acid interactions; analysis of chemo-mechanical function within multi-protein complexes will be covered in research reports and reviews of the current literature and in discussion of current experiments in the field. Berger

219S. Structural Biology of Signaling and Replication. (2) Mechanisms and structure in DNA replication and eukaryotic cell signaling. (F,SP) Kuriyan

219T. Signal Transduction Mechanisms. (2) Discussion of recent research on various aspects of signal transduction pathways in eukaryotic cells, including G protein-coupled receptors, protein tyrosine kinases, calcium cascades, synthesis and mobilization of lipid mediators, calcium sensing and response pathways, activation and inhibi
bition of gene expression, and the biochemical basis of signal desensitization and physiological adaptation, with strong emphasis on genetic and molecular analysis of three-dimensional organization in the yeast Saccharomyces cerevisiae. Thimer

219U. Single Molecule Biophysics. (2) Methods of single molecule manipulation and visualization that are used to characterize the structure and mechanochemical properties of translocating DNA binding protein such as RNA polymerase. (3) Application of new methods for engineering cell surface structures. (F,SP) Bertozzi

219Y. Regulation of HIV Gene Expression. (2) Regulation of HIV gene expression by viral proteins and cellular cofactors will be covered in research reports and reviews of the current literature and in discussion of current experiments in the field. Buxta

198. Biochemistry of Autophagy. (2) (F,SP) Zhong

219X. Cell Surface Glycoconjugate Interactions. (2) Investigations of cell surface glycoproteins as mediators of cell-cell and cell-matrix interactions. (F,SP) Collin

Division of Cell and Developmental Biology

Lower Division Courses

31. Genes, Cells, and Creatures. (3) Students with credit for Biology 1A and 1B will not receive credit for 31. Two hours of lecture and one hour of discussion per week. An introduction for nonmajors to some important concepts of modern biology, ranging from biologic molecules to organisms and the environment. Some possible topics are: 1) What is DNA and how does it serve as genetic material? 2) How does the immune system cope with exposure to disease-causing bacteria? 3) How do embryos develop? 4) Can we determine the size of human population that the earth can sustain? (SP) Wilt

32. Introduction to Human Physiology. (3) Three hours of lecture and one hour of discussion per week. Prerequisites: One year of high school college chemistry. A comprehensive introduction to human cell biology. The course will concentrate on basic mechanisms underlying human life processes, including cells and membrane function; cardiovascular, respiratory, renal, and gastrointestinal physiology; metabolism, endocrinology, and reproduction. (F,SP) Staff

32L. Introduction to Human Physiology Laboratory. (2) Three hours of laboratory and one hour of lecture per week. Prerequisites: 32 or may be taken concurrently. Experiments and demonstrations are designed to amplify and reinforce information presented in 32. Exercises include investigations into the structure and function of muscle, nerve, cardiovascular, renal, respiratory, endocrine, and reproductive systems. (F,SP) Staff

84. Sophomore Seminar. Course may be repeated for credit as topic varies. One hour of seminar per week for unit per unit for 15 weeks. One or one-half hours of seminar per week per unit for 10 weeks. Two hours of seminar per week for unit for eight weeks. Three hours of seminar per week per unit for five weeks. Sections 1-2 to be graded on a passed/not passed basis. Sections 3-4 to be graded on a letter-grade basis. Prerequisites: At discretion of instructor. Sophomore seminars are offered by faculty members and to students in the crucual second year. The topics vary from department to department and semester to semester. Enrollment limited to 15 sophomores. (F,SP)

91. Freshman/Sophomore Seminar. Course may be repeated for credit as topic varies. Two to four hours of seminar per week. Prerequisites: Open to freshmen and sophomores only. Freshman and sophomore seminars offer lower division students the opportunity to interact with a faculty mem-

ber and a group of peers in a small-seminar setting. These seminars are offered in all campus departments; topics vary from department to department and from semester to semester. (F,SP) Staff

91A. Biochemistry and Molecular Biology. (2-4)

91B. Cell and Developmental Biology. (2-4)

91C. Genetics and Development. (2-4)

Upper Division Courses

130. Cell Biology. (4) Three hours of lecture and one hour of discussion per week. Prerequisites: 102, and Biology 1A-1B. An introductory survey of cell and developmental biology. The assembly of supramolecular structures of single structure and function; the cell surface; cytoplasmic membranes; the cytoskeleton and cell motility; the eukaryotic genome, chromatin, and gene expression; the cell cycle; organismal homeo-
genesis, differentiation, and morphogenesis. (F,SP) Staff

130L. Cell and Developmental Biology Laboratory. (4) One hour of lecture and seven hours of laboratory per week. Prerequisites: May be taken concurrently with 130. Experimental analyses of central problems in cell biology using techniques of immunocytochemistry - bio-
chemical analysis of DNA and proteins, fluorescence microscopy of the cytoskeleton and organelles, DNA transfection of cultured mammalian cells, analysis of organelle functions, reporter assays of signal transduction pathways, analysis of cell cycle progression and apoptosis. (F,SP) Staff

131. Developmental Biology. (3) Three hours of lecture and one hour of discussion per week. Prerequisites: 102, Biology 1A-1B; 130 recommended. An introduction to principles and processes of embryonic and post-embryonic development, stressing mechanisms of cell and tissue interactions, morphogenesis and reg-
ulation of gene expression. (SP) Staff

132. Biology of Human Cancer. (4) Three hours of lecture and one hour of discussion per week. Prereq-
isites: 102 or 110 (may be taken concurrently), Biol-
ogy 1A-1B. Formerly 135G. The course is designed for students interested in learning about the molecular and cell biology of cancer and how this knowledge is being applied to the prevention, diagnosis and therapy of cancer. Topics covered include tumor pathology and epidemiology; tumor viruses and oncogenes; intra-
cellular signaling; tumor suppressors; multi-step car-
genogenesis and progression; genetic instability in cancer; tumor-host interactions; invasion and metast-
asis; tumor immunology; cancer therapy. (F,SP) Staff

133. Cell Biology of Cancer. (3) Three hours of lec-
ture per week. Prerequisites: Biology 1A-1B. Interac-
tions between cells that influence tumor development. Clonal origins of tumors. The field theory of cancer. Complexity and the polygenic origin of cancer. Epi-
genetic factors in cancer. (F,SP) Rubin

C134. Chromosome Biology/Cytogenetics. (3) Two hours of lecture and one hour of discussion per week. Prerequisites: Upper division genetics or cell biology course; concurrent enrollment with consent of in-
structor. Survey of behavior, structure, and function of chromosomes with emphasis on behavior in model or-
ganisms. Topics include mitosis, meiosis, chromosome aberrations, genome function, dosage compensation, transposons, repetitive DNA, and modern cytological imaging. Also listed as Plant and Microbial Biology C134. (SP) Cande, Hollick

135. Topics in Cell and Developmental Biology. At least three courses per year will be offered from the following list.

135A. Molecular Endocrinology. (3) Prerequisites: 212A, Biology 3A-3B or equivalent, or consent of instructor. Molecular mechanisms by which hormones elicit specific responses and regulate gene expression through interaction; synthesis, transport and targeting of hormone, its receptors. (Offered alternate years in the Fall.) (F) Firestone

135C. Regulation in Cells and Cell Systems. (3) Prereq-

uisites: 103. Studies on the regulation of cell meta-
abolism, with special emphasis on the relationships of alterations of control of intracellular activities. A comparative approach is used in uncovering regulatory mechanisms of fertilization, lymphocyte activation, cell cycles, hormonal stimulations, cell secretion, cell-cell interactions, and cell-cell communication. (Offered alt-
terate years in the spring.) (SP) Steinhardt

135E. Physiology of Human Development. (3) Prerequi-

sites: Biology 1A-1B. The developing human body from prenatal life to maturity; fertilization, embryology and fetal physiology, birth and neonatal adjustment, functional maturation in infant, child and adolescent; neuroendocrine control of puberty; factors influencing growth and development. (F) Timiras

135K. Physiology of the Aging Process. (3) No credit for 135K after taking 135M. Prerequisites: Biology 1A-
1B. The aging human body; structural and functional changes at organismic, cellular sub-cellular and molec-
ular levels. Comparative epidemiological and envi-
ronmental aspects. Theories of aging modification and life extension. (SP) Timiras

136. Physiology. (4) Students will receive no credit for 136 after Integrative Biology 132. Three hours of lec-
ture and one hour of discussion per week. Prerequi-
lites: Biology 1A-1B. Physiology of the mammalian (primarily human) physiology emphasizing physical, chemical, molecular and cellular bases of functional biology. The following topics will be covered: cellular and membrane ion transport; cardiovascular physiology; respiration; renal physiology; gastrointestinal physiology. Discussion section led by Graduate Student Instructor will review material covered in lecture. (SP) Forte, Machen

137. Computer Simulation in Biology. (3) Three hours of lecture per week. Formerly 138L. Modeling and computer simulation of dynamic biological pro-
cesses using special graphical interfaces requiring very little mathematical or computer experience. Models are drawn from the current literature to teach concepts and technique. The later part of the course is a workshop for student-selected individual projects. Computer work may be done at home or in the university laboratory. (SP) Macey, Oster

C140. General Genetics. (4) Students will receive 1 unit of credit for 140 after taking C142B or Integrative Biology C163. Three hours of lecture and one hour of discussion per week. Prerequisites: C100A/Chemistry C130 and 110 or consent of instructor. (May be taken concurrently.) In-depth introduction to genetics, including mechanisms of inheritance; gene transmis-
sion and recombination; transposable DNA elements, gene structure, function, and regulation; and experi-
mental genetics. Some exams may be given in the evening. (F,SP) Staff

140L. Genetics Laboratory. (4) Six hours of laboratory and two hours of lecture per week. Prerequisites: 140. May be taken concurrently. Experimental techniques in classical and molecular genetics. (SP) Staff

C141. Developmental Biology. (3) Formerly 131. Three hours of lecture and one hour of discussion per week. Prerequisites: 102 or C100A, Biology 1A-1B; 110 or 130 recommended. An introduction to principles and processes of embryonic and post-embryonic develop-
ment, stressing mechanisms of cell and tissue interac-
tions, morphogenesis and regulation of gene expression. (SP) Staff

C142. Survey of General Genetics. (4) Students will receive no credit for C142 or Integrative Biology C163 after taking 140 or Integrative Biology 141. Three hours of lecture and one hour of discussion per week. Prereq-
isites: Biology 1A-1B or consent of instructor. Rec-

ommended: Chemistry 3A-3B or equivalent. Formerly 142. A survey of genetics with primary emphasis upon mechanisms of heredity and molecular genetics. In-
cludes some treatment of evolutionary genetics. Also listed as Integrative Biology C163. (F) Beckendorf, Calendar
C148. Microbial Genomics and Genetics. (4) Three hours of lecture and one hour of discussion per week. Prerequisites: 100 or 102. Course emphasizes bacterial and archaeal genetics and comparative genomics. Genomics and genetic methods used to dissect metabolic and developmental processes in bacteria, archaea, and selected microbial eukaryotes. Genetic mechanisms in integreted with genomic information to address diversity and distribution of microbial processes. Introduction to the use of computational tools for a comparative analysis of microbial genomes and determining relationships among bacteria, archaea, and microbial eukaryotes. Also listed as Plant and Microbial Biology C148. (SP) Brenner, Glass

Graduate Courses

230. Advanced Cell Biology. (4) Three hours of lecture and one hour of discussion per week. Prerequisites: 130. Treatment of topics in cell biology. (F,SP) Staff

230X. Foundations in Cell Biology. (1) One hour of discussion per week. Prerequisites: Graduate standing; 130 must be taken concurrently, 102 or equivalent, and Biology 1A or equivalent. General course for first-year graduate students (except those in molecular and cell biology laboratories). The assembly of supramolecular structures; membrane structure and function; intracellular transport; cell surface; cytoskeletal membranes; the cytoskeleton and cell motility; the eukaryotic chromatin, and gene expression; the cell cycle; eukaryal bio- genesis differentiation; and morphogenesis. (SP) Staff

231. Advanced Stem Cell and Developmental Biology. Methodological background and one hour of discussion per week. Prerequisites: Consent of instructor. Principles of animal development will be set forth from the classical and recent experimental analysis of in- duction, localization, patterning mutants, axis forma- tion, regional gene expression, and cell interactions. Early development of selected vertebrates and invertebrates will be described. Basic experimental methods and techniques will be presented. A weekly discussion section with readings from the research liter- ature is required. Students will prepare a mini-grant proposal. (SP) Beckendorf, Weisblat

236. Advanced Mammalian Physiology. (5) Three hours of lecture and two hours of discussion per week. Prerequisites: Consent of instructor. Principles of mammalian (primarily human) physiology emphasizing physical, chemical, molecular, and cellular bases of functional biology. The following topics will be covered: cellular physiology; signal transduction and non-coding RNA; cell and endocrine regulation; autonomic nervous system regulation; skeletal, smooth, and cardiac muscles; cardiovascular physiology; respiration; renal physiology; gastrointestinal physiology. Discussion sections will study advanced physiological topics, including: presentations by the faculty; problem sets; discussion of the primary literature and of reviews; two presenta- tions by each student on topics in current physiological research. (SP) Forte

C237. Stem Cells and Directed Organogenesis. (3) Three hours of lecture/laboratory per week. Grading: Letter; Satisfactory/Unsatisfactory for CIRM humanities and law fellows. Prerequisites: Consent of instructor. This course will provide an overview of basic and applied embryonic stem cell (ESC) biology. Topics will include early embryonic development, ESC laboratory methods, biomaterials for directed differentiation and other stem cell manipulation, and clinical uses of stem cells. Also listed as Bioengineering C238. (SP) Conboy

239. Research Review in Cell and Developmental Biology. Course may be repeated for credit. Two hours of seminar per week. Must be taken on a satisfac- tory/unsatisfactory basis. Prerequisites: Consent of instructor. Review of current literature and discus- sion of original research. (F,SP)

239A. Animal Cells and Viruses. (2) H. Rubin

239B. Regulation of the Cell Cycle. (2) Rape

239C. Vertebrate Development. (2) Gerhart

239D. Epithelial Function, Structure, and Regulations. (2) Machen

239E. Tumor Biology. (2) Nandi

239EE. Cell Morphogenesis. (2) (F,SP) Heald

239F. Nucleocyttoplasmic Transport. (2) Weisblat

239FF. Signal Transduction and Tumor Suppressor Genes. (5) (F,SP) Luo

239G. Photoreceptor Motility and Morphogenesis. (2) Bumsaid

239G. Mouse neuronal stem cell differentiation. Wurmsr

239H. Cell Division. (2) Cande

239HH. Mechanisms of Control of Growth and Cell Proliferation. (2) Identifying pathways that restrict growth and cell proliferation in vivo. (F,SP) Schekman

239N. Biophysics of Cell Motility and Morphogenesis. (2) Oster

239O. Cancer Biology. (2) Inheritance, chromatin structure, gene expression, and the organization of chromosomal abnormalities. (F,SP) Karp

239P. Development and Aging. (2) Timiras

239Q. Regulation of Cell Polarity in Drosophila. (2) Mechanisms underlying the establishment and main- tenance of cellular organization in epithelia and other cell types. (F,SP) Bider

239S. Cellular Transport Processes. (2) Forte

239T. The Cytoskeleton and Morphogenesis. (2) Formerly 249Z. Review of current literature and discus- sion of current research. (F,SP) Weisblat

239W. Leech Embryology and Development. (2) Weisblat

239X. Malignant Transformation. (2) Course may be taken on a satisfactory/unsatisfactory basis. Prerequisites: Consent of instructor. Must be taken on a satisfactory/unsatisfactory basis. Prerequisites: Consent of instructor. Formerly 218C. Malignant transformation by retroviruses and the role of protein phosphorylation in growth regulation. (F,SP) Martin

239Y. Determination and Differentiation in Develop- ment. (2) Wilt

239Z. Chromosome Remodeling and Reorganization During Meiosis. (2) How chromosomes are reorga- nized during meiosis to accomplish the pairing, re- combination, and segregation leading up to successful gamete production. Dembabc

Division of Genetics and Development Lower Division Courses

41. Genetics and Society. (3) Students will receive 2 units for Molecular and Cell Biology 41 after taking 41X, Interdepartmental Studies 41X, or Plant Biology 41X. Students will receive no credit after taking Letters and Science 18. Two hours of lecture and one hour of discussion per week. Prerequisites: Primarily for students not specializing in genetics. Basic concepts of inheritance; gene mapping; gene expression and genetic disease in animals and humans; social in- heritance of inferences. Offered alternate years. (SP) Staff

Upper Division Courses

140. General Genetics. (4) Students will receive 1 unit of credit for Molecular and Cell Biology C140 after taking C140A. Three hours of lecture and one hour of discussion per week. Prerequisites: C100A/Chemistry C130 and 110 or consent of instructor. (110 may be taken concurrently). In-depth introduction to genetics, including mechanisms of inheritance; gene trans- mission and recombination; transposable DNA ele- ments; structure and function of genetic regulation; and developmental genetics. Some exams may be given in the evening. (F,SP) Staff

140L. Genetics Laboratory. (4) Six hours of laboratory and two hours of lecture per week. Prerequisites: 140. May be taken concurrently. Experimental techniques in classical and molecular genetics. (SP) Staff

C145. Genomics. (4) Three hours of lecture and one hour of discussion per week. Prerequisites: 102 or 110. In-depth introduction to genomics, including genome sequencing; bioinformatics; sequence an- notation and analysis; complex trait mapping; DNA mi- croarrays and their use in genomics; structural ge- nomics. Also listed as Plant and Microbial Biology C145. (SP) Brenner, Eisen

C146. Topics in Computational Biology and Ge- nomics. (4) Three hours of lecture and one hour of discussion per week. Prerequisites: Bioengineering 142, Upper Division Courses 126, or permission of instructor to write programs in Java, Perl, C, or C++, 100, 102, or equivalent; or consent of instructor. Instruction and discus- sion of topics in genomics and computational bi- ology ranging from evolutionary genomics to the course will cover principles and application of molecular se- quence comparison, genome sequencing and func- tional annotation, and phylogenetic analysis. Also listed as Bioengineering C146 and Plant and Microbial Bi- ology C146. (SP) Brenner, Eisen

Graduate Courses

240. Advanced Genetic Analysis. (4) Three hours of lecture and one hour of discussion per week. Prerequisites: Graduate standing with 110 or 140 or consent of instructor. Principles and practice of classical and modern genetic analysis as applied to eukaryotic or- ganisms, including yeast, nematodes, Drosophila, mice, and humans; isolation and analysis of mutations; gene mapping; suppressor analysis; chromosome structure; control of gene expression; and developmental ge- nomics. (F,SP) Cline, Drubin, Meyer

241. General Genetics Workshop. (4) Three hours of lecture and one hour of discussion per week. Prerequisites: Consent of instructor. This course is for Molecular and Cell Biology graduate students. It will teach in-depth introduction to genetics, including mechanisms of inheritance; gene transmission and recombination; transposable DNA elements; gene structure, function, and regulation; and developmen- tal genetics. Some exams may be given in the evening. A maximum of 140 and 241 must be concurrently. Students enrolled in 241 will also be required to participate in a one-hour specialized discussion session per week, led by the course instructor. This section will cover methodological background and will be based on the primary literature of the field. (F,SP) Staff

242A. Advanced Topics in Genetics. (2) Course may be repeated for credit. Three hours of lecture and one hour of discussion per week. Prerequisites: Graduate standing with 110 and 140 or equivalents; consent of instructor. Advanced level of coverage of current research problems in genetics. The topics cov- ered vary from year to year.

C245. Mechanisms of Developmental Evolution. (3) Three hours of lecture and one hour of discussion per week. Prerequisites: Graduate standing or upper di- vision molecular and cell biology or other development courses. Synthesis of modern research on the molecular genetics of developmental evolution. Topics include the origin of animals, the evolution of body plan, the role of tran- sposable DNA elements in the evolution of developmental evolution, and genome evolution. Also listed as Integrative Biology C266. (SP) King, Levine, Patel

C246. Topics in Computational Biology and Ge- nomics. (4) Three hours of lecture, one and one-half hours of paper review, and discussion per week. Prerequisites: Bioengineering 142, Computer Science 61A, or equivalent ability to write programs in Java, Perl, C, or C++, 100, 102, or equivalent; or consent of in- structor. Instruction and discussion of topics in genomics
and computational biology. Working from evolutionary concepts, the course will cover principles and application of molecular sequence comparison, genome sequencing and functional annotation, and phylogenetic analysis. Also listed as Bioengineering C246 and Plant and Microbial Biology C246, (SP) Brenner, Eisen 249G. Computational Genomics. (2) Recent developments in computational methods for genomics and their application for understanding the structure and function of genes in completely sequenced genomes. (F,SP) Brenner

249S. Evolution of Development Mechanisms. (2) Evolution of development mechanisms with a focus on the genes that regulate segmentation and regionalization of the body plan. (F,SP) Patel

249T. Theoretical Modeling of Complex Biological Systems: Bioinformatics. (2) Theoretical modeling of complex biological systems in genetics and development. (F,SP) Rokhsar

249Y. Mechanisms of Gene Control in Vertebrate Animals. (2) Formerly 218Y. This course will focus on mechanisms of gene control in vertebrate animals, particularly in the area of vertebrate development. Amphilbic egg formation, meiosis induction, neural induction, and patterning of the nervous system at the molecular level. Control of transcription, post-transcriptional control of gene expression (including control of RNA turnover and RNA localization). (F,SP) Harland

Division of Immunology

Lower Division Courses

50. The Immune System and Disease. (3) Students will receive no credit for 50 after taking 100 or 102. Three hours of lecture and one hour of discussion per week. Prerequisites: Consent of instructor. Formerly 150. Chemistry 1A and high school biology or Biology 1A. Course will discuss how the immune system resolves, prevents, or causes disease. A general overview of the immune response will be followed by five weeks discussing infectious diseases including anthrax, mad cow, herpes, malaria, tuberculosis, and HIV. In addition, other lectures will focus on current immunology topics including vaccines, autoimmunity, allergy, transplantation, and cancer. (SP) Beatty

55. Plagues and Pandemics. (3) Students will receive no credit for 55 after taking 100, C100A, 100B, 103, C103, 150, Chemistry C130, Plant and Microbial Biology C130, and Public Health C102. Three hours of lecture per week. Discussion of how infectious agents invade and kill their host, the immune system will be covered in the first five weeks followed by five weeks discussing infectious diseases including anthrax, mad cow, herpes, malaria, tuberculosis, and HIV. In addition, other lectures will focus on current immunology topics including vaccines, autoimmunity, allergy, transplantation, and cancer. (SP) Beatty

Upper Division Courses

150. Molecular Immunology. (4) Three hours of lecture and one hour of discussion per week. Prerequisites: 100 or 102. Fundamentals of immunology with emphasis on biochemical and molecular approaches to study of the immune system and its application in medicine and biotechnology. Topics covered include description of the immune system, antibody and T-cell receptor structure and function, genes of the immunoglobulin superfamily, cell and molecular mediators that regulate the immune response, allergy, autoimmunity, immunodeficiency, cancer, and tumor immunology. (F,SP) Shastril, Schiessel

150L. Immunology Laboratory. (4) Eight hours of laboratory and one hour of lecture per week. Prerequisites: 150 (may be taken concurrently); consent of instructor. Formerly Microbiology 103L. Experimental techniques in mammalian molecular cellular immunology. Molecular techniques covered include PCR and recombinant DNA procedures such as gene cloning, gene transfer, DNA sequencing, Southern blot, and restriction mapping. Immunological techniques covered include cell culture and monoclonal antibody production, flow cytometry, ELISA, immunoprecipitation, and Western blot. (F,SP) Beatty, Sha

Graduate Courses

250. Advanced Immunology. (4) Three hours of lecture and one hour of discussion per week. Prerequisites: 100, 110, 140, 150 or consent of instructor. Molecular and cellular analysis of the immune response. Structure and function of antibodies and T-cell receptors, including antibody-antigen reactions, principles of molecular recognition, recombination and regulation of antibody genes, and the immunoglobulin class switch; B-cell development, activation, and tolerance. Structure and function of T-cell receptors and T-cell receptor genes; antigen processing and presentation, and role of MHC molecules in guiding T-cell recognition; T-cell development, positive selection, and tolerance. Analysis of T-cells, natural killer cells, and antibody surveillance. (SP) Rauiet, Robey, Sha

251. The Regulation of Immune System Development and Function. (1) One hour of lecture per week. Must be taken on a satisfactory/unsatisfactory basis. Prerequisites: 250 or consent of instructor. This is an advanced seminar course which will consider current research questions and experimental approaches in molecular and cellular immunology. Each registrant will present a 30-minute research talk describing the problems they have studied or are studying in greater detail, their preliminary data, and technical problems. Other course participants (including basic immunology faculty) will provide criticism and suggestions. (SP) Schlissel

254. Cancer and Immunology. (2) Two hours of lecture per week. Prerequisites: Consent of instructor. Formerly Microbiology 232. Emphasis will be on the treatment or prevention of cancer based on rational approaches derived from recent advances in tumor immunology. The course will examine the application of basic immunology in immunotherapy to more applied studies in animal models and clinical trials. Introductory lectures by instructors followed by student presentations of original literature and lectures by invited speakers engaged in translational and clinical research in tumor immunotherapy. Offered every year. (SP) Sha

255. Selected Topics in Immunology. (1-3) Course may be repeated for credit. One hour of lecture with the possibility of one to two hours of discussion per week, with units to be assigned on contact hours. Must be taken on a satisfactory/unsatisfactory basis. Prerequisites: Consent of instructor. Formerly Microbiology 232. Emphasis will be on the treatment or prevention of cancer based on rational approaches derived from recent advances in tumor immunology. The course will examine the application of basic immunology in immunotherapy to more applied studies in animal models and clinical trials. Introductory lectures by instructors followed by student presentations of original literature and lectures by invited speakers engaged in translational and clinical research in tumor immunotherapy. Offered every year. (SP) Staff

259. Research Review in Immunology. Course may be repeated for credit. Two hours of seminar per week. Must be taken on a satisfactory/unsatisfactory basis. Prerequisites: Consent of instructor. Review of current literature and discussion of original research. (F,SP)

259B. Specificity of T lymphocytes. (2) Molecular basis of antigen recognition function of T lymphocytes. Shastril

259E. Regulation of T-Cell Receptor Genes Expression. (2) Molecular biology of T-cell receptor genes and their transcription controlling proteins/genes. Programmed cell death during thymocyte differentiation. Winoto

259F. Antigen Receptor Repertoire of T Lymphocytes. (2) Molecular and biological basis for development of antigen/MHC repertoire. Rauiet

259G. T-Cell Development. (2) Molecular and cellular aspects of thymocyte differentiation. Robey

259H. B-Cell Differentiation. (2) Molecular basis of terminal B-cell differentiation. Role of transcription factors in B-cell activation. Sha

259I. Regulation of Lymphocyte Development. (2) Molecular mechanisms involved in the synergistic relationship between V(D)J recombination and lymphocyte development/function. Schiessel

259J. Immune Evasion by Viruses. (2) Course may be repeated for credit. Two hours of seminar per week. Must be taken on a satisfactory/unsatisfactory basis. Prerequisites: Consent of instructor. The mechanisms
C62. Drugs and the Brain. (3) Students will receive no credit for C62 after taking 62, Letters and Science 19, or Psychology 119. Three hours of lecture and one hour of discussion per week. Prerequisites: High school chemistry or Preparatory Chemistry 1A; high school biology or Biology 1A. This course will introduce lower division undergraduates to the basic structure and function of the human brain and its role in disease. The second part of the course covers basic material on molecular biology of the nervous system, including ion channels, neurotransmitters and their receptors, second messengers and signaling mechanisms of development and plasticity. (SP) Presti

C262. Advanced Topics in Systems Neuroscience. (3) Corequisites: 160 and 160L or equivalent. Four hours of lecture per week. Prerequisites: Consent of instructor. Course may be repeated for credit. Three hours of lecture/discussion per week. Prerequisites: 160 or equivalent. Advanced coverage of current research problems in systems-level neuroscience, and experimental and computational techniques used for these studies. Also listed as Neuroscience C262. Offered odd-numbered years. (F) Staff

C263. Advanced Developmental Neurobiology. (3) Three hours of lecture per week. Prerequisites: 162 or equivalent. Advanced level coverage of current research on developmental mechanisms of vertebrate and invertebrate nervous systems. Also listed as Neuroscience C263. Offered odd-numbered years. (SP) Staff

C264A. Vision A: Quantitative, Perceptual, and Psychological Aspects. (2) Two hours of lecture per week. Prerequisites: Consent of instructor. The course will present basic material on the retina and visual pathways, psychophysical measurements, visual sensitivity, color vision, and the estimation of disparity and motion. Introduction to front-end visual processing in mammalian visual system. Basic optics, anatomy and physiology of retina, lateral geniculate nucleus, and primary visual cortex. Psychophysics of color, light and dark adaptation, spatial contrast sensitivity, spatial resolution, spatial temporal contrast sensitivity, motion and disparity measurement. Connections between psychophysics and physiology. Relevant modeling techniques such as linear systems, signal detection theory, and information theory will be introduced and applied. There will be an accompanying laboratory which the students can register for separately. Also listed as Psychology C215A, Computer Science C293A, and Vision Science C293A.

C264B. Vision B: Quantitative, Perceptual, and Physiological Aspects. (2) Three hours of lecture per week for seven and one-half weeks. Prerequisites: Consent of instructor. The course will present basic material on the retina and visual pathways. From 2D visual processing and the neural coding of shape and spatial layout such as texture, contour, shading, stereopsis, and structure from motion. Geometrical analysis of these cues. Probabilistic theory for optimal combination of cues and estimation of visual 3D structure. Relevant physiology of striate areas V1, V2, V4, and higher areas. Also listed as Psychology C215B, Computer Science C293B, and Vision Science C293B.

C264C. Vision C: Perceptual Organization. (2) Three hours of lecture for seven and one-half weeks. Prerequisites: Consent of instructor. This course will cover "higher-level" visual processing including the perception of objects, their properties, and the determination of part-whole structure from optical images. The approach will be interdisciplinary, including material from psychophysics, classical perceptual psychology, computational modeling, and neuroscience. Specific topics include perception of color, grouping, figure-ground organization, modal and amodal completion, and part-whole structure. Also listed as Vision Science C293C, Psychology C215C, and Computer Science C293C.

C264D. Vision D: High-Level Vision. (2) Three hours of lecture per week for seven and one-half weeks. Prerequisites: Consent of instructor. This course will cover "high-level" visual processing, including object recognition, visual attention of visual processing, object imagery, and visual awareness. The approach will be interdisciplinary, including material from psychophysics, classical perceptual psychology, computational modeling, and neuroscience. Also listed as Vision Science C293D, Psychology C215D, and Computer Science C293D.

C264L. Vision Laboratory: Quantitative, Perceptual, and Physiological Aspects. (1) Course may be repeated for credit. One hour of laboratory per week for seven and one-half weeks. Prerequisites: Consent of instructor. Quantitative analysis of psychophysical properties of spatial, color, temporal and binocular vision, motion sensitivity and adaptation and their underlying physiological mechanisms. Also listed as Psychology C215L, Computer Science C293L, and Vision Science C293L.

C269. Research Review in Neurobiology. Course may be repeated for credit. Two hours of seminar per week. Must be taken on a satisfactory/unsatisfactory basis. Prerequisites: Consent of instructor. Review of current literature and discussion of original research. (F.S.P.)

C269A. Special Topics in Neuropsychology. (2) Molecular mechanisms of neurotransmitter and ion channel dysfunction and synaptic plasticity, and synaptic plasticity using electrophysiological and optical imaging techniques. (F.S.P) Poo

C269B. Transmitter and Neuromodulation. (2) (F.S.P) Zucker

C269D. Signaling Within and Between Neurons. (2) Review of recent research in molecular mechanisms involved in intracellular and extracellular signaling in the nervous system. (F.S.P) Kramer

C269E. Auditory Neuroscience. (2) (F.S.P) Winer

C269F. Retinal Signal Processing. (2) (F.S.P) Owen

C269G. Neural Systems. (2) (F.S.P) Westheimer

C269H. Recent Advances in Retinal Neurobiology. (2) (F.S.P) Werblin


C269K. Protein Trafficking and Synapses Formation. (2) Molecular mechanisms of polarized protein trafficking and synaptogenesis in neurons. (F.S.P) Chen

C269M. Insect Neurophysiology. (2) Drosophila mutants that have behavioral abnormalities to unravel new and basic features of nervous system structure and function. Tanouye

C269R. Potassium Channels and Synthetic Plasticity. (2) (F.S.P) Isaacoff

C269S. Molecular Mechanisms of Olfaction. (2) (F.S.P) Nagai

C269T. Processing of Visual Information in the Mammalian Brain. (2) (F.S.P) Dan

C269U. (2) Molecular and Cell Biology / 379

C269V. (2) Molecular and Cell Biology / 379

C269W. Molecular and Cell Biology / 379

C269X. Molecular and Cell Biology / 379

C269Y. Molecular and Cell Biology / 379

C269Z. Molecular and Cell Biology / 379

C270. Advanced Cellular Neurobiology. (3) Three hours of lecture per week. Prerequisites: 160, Physical-chemical basis of membrane potentials, electrotaxis, action potential generation and propagation, synaptic transmission, sensory receptor function, and volume conductor potentials. Also listed as Neuroscience C261. Offered even-numbered years. (SP) Chen, Isaacoff, Kramer, Poo, Westheimer

C270. Introduction to Neurobiology. (4) Three hours of lecture and one hour of discussion per week. Prerequisites: 102 or 100, Biology 1A, Physics 8A-8B. An introductory course designed to provide a general understanding of the nervous system including how it functions in the body and how it changes with learning and memory. Analysis of the level of molecules to cells to simple circuits to complex networks to higher brain functions. Also listed as Neuroscience C160. (F.S.P) Staff

C270. Special Topics in Neuroplasticity. (2) Molecular mechanisms of synaptic plasticity, molecular and cellular studies of nerve growth, axon guidance, synaptogenesis in neurons. (F.S.P) Kramer

C270. Experimental analyses of properties and interactions of nerve cells and systems, illustrating principal mathematical analysis underlying the inference of 3D scene perception of objects, their properties, and the determination of part-whole structure from optical images. The approach will be interdisciplinary, including material from psychophysics, classical perceptual psychology, computational modeling, and neuroscience. Specific topics include perception of color, grouping, figure-ground organization, modal and amodal completion, and part-whole structure. Also listed as Vision Science C293C, Psychology C215C, and Computer Science C293C.
All Divisions

Lower Division Courses

15. Current Topics in the Biological Sciences. (2) Course may be repeated for credit as topic varies. Two hours of lecture and one hour of discussion per week. Prerequisites: Suitable for freshmen who plan to major in a biological science. Students in this course will critically examine modern methods of biological investigations and their social implications. Relevant literature will be used to present basic biological concepts that address the cultural, technological and health aspects of current topics in the biological sciences. Designing and evaluating scientific questions will be stressed. (SP) Kane

90. Freshman Seminars. Course may be repeated for credit as topic varies. One hour of seminar per week. Prerequisites: Open to freshmen only. The Berkeley Seminar Program has been designed to provide new students with the opportunity to explore an intellectual topic with a faculty member in a small-seminar setting. Berkeley Seminars are offered in all campus departments, and topics vary from department to department and semester to semester. (F,SP) Staff

90A. Biochemistry and Molecular Biology. (1)
90B. Cell and Developmental Biology. (1)
90C. Genetics and Development. (1)
90D. Immunology. (1)
90E. Neurobiology. (1)

91. Freshman/Sophomore Seminar. Course may be repeated for credit as topic varies. Two to four hours of seminar per week. Prerequisites: Open to freshmen and sophomores only. These seminars are offered in all campus departments; topics vary from department to department and semester to semester. (F,SP) Staff

91A. Biochemistry and Molecular Biology. (2-4)
91B. Cell and Developmental Biology. (2-4)
91C. Genetics and Development. (2-4)
91D. Immunology. (2-4)
91E. Neurobiology. (2-4)

C96. Studying the Biological Sciences. (1) Two hours of lecture per week. Must be taken on a pass/no pass basis. Prerequisite: Consent of instructor. Freshmen will be introduced to the "culture" of the biological sciences, along with an in-depth orientation to the academic life and the culture of the university as they relate to majoring in biology. Students will learn concepts, skills, and information that they can use in their major course, and as future science professionals. Restricted to freshmen in the biology scholastic program. Also listed as Plant and Microbial Biology C96 and Integrative Biology C96. (F) Kane

98. Directed Group Study. (1-4) Course may be repeated for credit. One hour of lecture per week per unit. Must be taken on a pass/no pass basis. Prerequisites: Freshmen and sophomores only. Lectures and small group discussions focusing on topics of interest, varying from semester to semester.

99. Supervised Independent Study. (1-4) Course may be repeated for credit. Must be taken on a pass/no pass basis. Prerequisites: Consent of instructor. Students will work with a faculty member to conduct research under the supervision of a faculty member. (F,SP) Staff

198. Directed Group Study. (1-4) Course may be repeated for credit. One hour of seminar per week. Must be taken on a pass/no pass basis. Prerequisites: Open to freshmen and sophomores only. Individual study for the comprehensive or language examination in consultation with the field adviser. (F,SP) Staff

282. Tumor Biology Seminar. (1) Course may be repeated for credit. One hour of seminar per week. Must be taken on a pass/no pass basis. Prerequisites: Consent of instructor. Formerly Integrative Biology 282. Reviews and reports of current research in tumor biology. (F) Firestone

290. Graduate Seminar. (1) Course may be repeated for credit. One to two hours of seminar per week. Prerequisites: Graduate standing in the department or consent of instructor. Graduate student presentations on selected research topics in molecular and cell biology. Several sections covering different topics each semester. Course partial credit; no more than one section is permitted. List of topics to be announced before each semester. (F,SP) Staff

291A. Introduction to Research. (2-12) Laboratory research, conferences. Credit and grade to be awarded on completion of sequence. Prerequisites: Consent of instructor. (F) Kane

291B. Introduction to Research. (2-12) Laboratory research, conferences. Credit and grade to be awarded on completion of sequence. Prerequisites: Consent of instructor. (F) Kane

292. Research. (3-12) Course may be repeated for credit. Laboratory research, conferences. Individual research under the supervision of a faculty member. (F,SP) Staff

293A. Research Seminar. (2) Two hours of seminar per week. Credit and grade to be awarded on completion of sequence. Prerequisites: Concurrent enrollment in 291A or 292. Seminar on presentation and evaluation of results in area of student's individual research interests. (F) Staff

293B. Research Seminar. (2) Two hours of seminar per week. Credit and grade to be awarded on completion of sequence. Prerequisites: 293A; concurrent enrollment in 291B or 292. Seminar on presentation and evaluation of results in area of student's individual research interests. (SP) Staff

293C. Responsible Conduct of Research. (1) Course may be repeated for credit. One and one-half to two hours of case history discussion per week. Must be taken on a satisfactory/unsatisfactory basis. Prerequisites: Consent of instructor. This course will cover topics in responsible conduct in research drawing from case studies of the Association of American Medical Colleges and the NIH. Students will review case studies in preparation for class discussion. Required of all MCB graduate and post doctoral students funded on NIH training grants. One session will probably feature a guest lecturer on a topic relevant to the course. (SP) Staff

295. Methods and Logic in Biology. (3) Two hours of lecture and one hour of discussion per week. Prerequisites: Open to graduate and postdoctoral students. This course is designed for graduate students in the biological sciences with planning their postgraduate careers. Weekly guest speakers will present their experiences on a variety of topics. Post-doctoral students are encouraged to participate in small group discussions focusing on topics of interest, varying from semester to semester.

296. Directed Independent Study. (1-4) Course may be repeated for credit. One semester. Must be taken on a pass/no pass basis. Prerequisites: Open to postgraduate students in consultation with a faculty member; an introduction to experimental methods and other topics of interest. (SP) Staff

297. Methods and Logic in Biology. (3) Two hours of lecture and one hour of discussion per week. Prerequisites: Consent of instructor. This course will be some of the papers in the scientific literature that provide the discoveries and the themes for the methods and logic course will be presented. (F) Botchan, Meyer, Rine

601. Individual Study for Master’s Students. (1-8) Course may be repeated for credit. Course does not satisfy unit or residence requirements for master’s degree. Must be taken on a satisfactory/unsatisfactory basis.

602. Individual Study for Doctoral Students. (1-8) Course may be repeated for credit. Course does not satisfy unit or residence requirements for doctoral degree. Must be taken on a satisfactory/unsatisfactory basis. Must be taken on a satisfactory/unsatisfactory basis.
**Prerequisites**: Graduate standing; consent of instructor and sponsorship of a faculty member. Individualized laboratory instruction. (F,SP)

481B. Transmission Electron Microscopy. (1-4) **Prerequisites**: Graduate standing; consent of instructor and sponsorship of a faculty member. (F,SP) Cande

481C. Scanning Electron Microscopy. (1-4) **Prerequisites**: Graduate standing; consent of instructor and sponsorship of a faculty member. (F,SP) Cande

481E. Principles and Operation of the Light Microscope. (1-4) **Prerequisites**: Graduate standing; consent of instructor and sponsorship of a faculty member. Staff

**Interdepartmental Studies Courses**

**Upper Division Courses**

**IDS 114A-114B. Advances in Aging. (2,2) Course may be repeated for credit. Two hours of lecture per week.** Prerequisites: High school biology and chemistry. The tandem course will single out specific topics in aging of great current interest and present lectures on several aspects of each topic (biomedical, health, socio-economic, legal, and ethical). Each semester a different topic will be presented. Invited speakers with special expertise in these areas will participate. Sponsoring departments: Molecular and Cell Biology, Optometry, Public Health, and Social Welfare. (F,SP) Timiras

**Graduate Courses**

**IDS 282. Tumor Biology Seminar. (1) Course may be repeated for credit. One hour of seminar per week.** Prerequisites: Graduate standing; consent of instructor. Reviews and reports of current research in tumor biology. Sponsoring departments: Integrative Biology and Molecular and Cell Biology, Chemistry, and Biomedical Engineering. (SP) Timiras

**Music**

(College of Letters and Science)

**Department Office**: 104 Morrison Hall, (510) 642-2678 music.berkeley.edu

**Chair**: Bonnie C. Wade

**Professors**

Wyse J. Allanbrook, Ph.D. Stanford University. Late 18th-century music

Edmund Campion, D.M.A. Columbia University. Composition, computer music

Joey Graft, Ph.D. University of Michigan. Caribbean music, popular music, cultural studies

Marka Kuzma (The Virginia Chan Lew Chair in Music), Ph.D. Indiana University. Director, University choruses; choral conducting

Jorge Lerman, Ph.D. University of Chicago. Composition, analysis, theory

David Milnes, D.M.A. Yale University. Director, University Symphony; orchestral conducting

David Monorey, Ph.D. University of California, Berkeley. Baroque period, performance practice, harpsichord, organ

John Roberts, Ph.D. University of California, Berkeley. Handel, 19th-century opera

Richard Timothy Nun (Chair of 1965 Chair), Ph.D. Columbia University. Renaissance period, Russian music, Stravinsky

Bonnie C. Wade (The Richard and Rhoda Goldman Chair in Interdisciplinary Studies), Ph.D. University of California. Ethnomusicology, South and East Asia

David Wessel, Ph.D. Stanford University. Computer music, music production

Richard L. Crocker, Ph.D. (Emeritus) Alan Curtis, Ph.D. (Emeritus)

*Mary Kay Duggan, Ph.D. (Emeritus)*

Edwin Duggan, M.F.A. (Emeritus)

Richard Feliciano, Ph.D. (Emeritus)

Daniel Heathz, Ph.D. (Emeritus)

Andrew W. Imrie, M.A. (Emeritus)

*Lawrence H. Moe, Ph.D. (Emeritus)*

*Mary Kay Duggan, Ph.D. (Emeritus)*

Michael Senturia, A.B. (Emeritus)

Olly Wilson, Ph.D. (Emeritus)

**Associate Professors**

Benjamin Brinner, Ph.D. University of California, Berkeley. Ethnomusicology, Indonesian music, Middle Eastern music

Cindy Cox, D.M.A. Indiana University. Composition

Mary Ann Smart, Ph.D. Cornell University. 19th-century opera, music and gender

Kate van Orden, Ph.D. University of Chicago. French Renaissance, modernism

**Assistant Professor**

Myra Mellor, B.A. Evergreen State College. Improvisation, jazz

**Senior Lecturers**

Christy Dana, D.M.A. (Musician/Jazz)

Karen Rosenblueth, Ph.D. (Musicologist)

Elizabeth Davidson, M.A. (Emerita)

**Lecturers**

*Anthony Rehfield, Benedict, M.A. (Voice)*

Ken Berman (Piano; Jazz)

Louise Bidwell

Charlene Brendler, M.M. (Harpichord, Fortepiano)

Robert Calonic, M.A. (Wind ensemble)

John Richard Darby (Percussion)

Jacqueline Chiu, M.M. (Piano)

Florian Conzett (Percussion)

Jeff Davis, M.M. (Canalon)

Rani Didi (Voice; Indian Classical)

Anna Carol Dudley, M.A. (Voice)

Cecilia Engelhart (Voice; Jazz)

Leong Fung, M.M. (Violoncello)

Rodney Gehrke, M.A. (Organ)

Michael Goldsmith, M.M. (Guitar)

David Granger, M.A. (Bassoon)

Susan Gundunas, B.A. (Voice)

Katherine Heater (Harpichord, Fortepiano)

Graeme Jennings (Violin)

MacDowell Kenley, D.M.A. (Trombone)

Daniel Kobaika (Violin)

Janet Maestre, B.Mus. (Flute)

Anthony Martin, M.M. (Baroque Violin)

Frank Martin (Piano; Jazz)

Jeff Massaran (Guitar; Music)

Laurie McGraw, M.A. (Trumpet)

Julie McKenzie, B.M. (Flute)

Midyanto (Gamelan)

Emma Molin (Flute)

Carla Moore (Violin, Baroque)

Michael Orlando, A.B. (Piano)

David Pereira, Ph.D. (Harmony)

Sarah Rathke, M.M. (Oboe)

Elizabeth Reeder, M.M. (Lute, M.E. da gamba)

Ellen Ruth Ross, M.A. (Viola)

Irene Sharp, B.F.A. (Clarinet)

Allen Shearer, Ph.D. (Voice)

Benjamin Simon, M.M. (Viola)

Marko Smiley, M.M. (Violin)

Karen Shinohara (Soprano; Violin)

Julie Steinberg (Piano)

David Taylor, Ph.D. (Lute)

Peter Wachtler, B.M. (Tuba)

Robert Ward, B.M. (Horn)

Martha Wesley, A.B. (Piano)

William Winant, M.F.A. (Percussion)

Dave Wolford (Saxophone)

Betty Woo, D.M.A. (Piano)

Richard Worn, M.M. (String bass)

Dann Zen (Saxophone)

**Student Affairs Officers (Graduate and Undergraduate):** Kris Albert and Melissa Hacker

**Major Advisers:** Department faculty by assignment

**Minor Advisers:** Ph.D. students who plan to major in music or take any music courses from 130-189 and other upper-division music courses with an M suffix. Must include at least three semesters of performance from 140-145, 147-149, and 150A-150H.

Performance courses may be taken at any point in the student’s career. Students are expected to shape their programs according to their particular interests, using the 21 units of music major electives and, if they wish, additional courses from both within and outside the department. Suggested areas of specialization include composition, music of the world, western music history, conducting, performance, music theater, improvisation, theory and analysis, cognitive science, and music technology. At least one semester, students will consult with their advisers to discuss their programs.

**Honors Program.** The Department of Music offers an individualized program leading to the A.B. degree with honors. Students with a grade-point average of 3.3 overall and 3.5 in the major may apply to enroll in the honors program in the last two semesters of their undergraduate study. Under course H195, students undertake a special project exceeding the scope of regular coursework for one or two semesters. Application forms with more detailed criteria for approval can be obtained from the department office and must be submitted by the end of the first week of classes in the semester in which the project is started.

Music / 381

**Music Placement Procedure**, which is offered each semester in the week before instruction begins. Go to music.berkeley.edu/degree for details. The examination may be taken on an advisory basis.

**Prospective music majors are encouraged to begin the music program early, preferably in their freshman year. Staff advisers as well as all members of the faculty are available to consult with students interested in the music program.**

The Center for New Music and Audio Technologies (CNMAT) provides computer music and interdisciplinary research in applications of computer technology to sound.

The Major

**Lower Division**

**49A Introduction to Criticism**

Musicianship series (49B, 50, 51)

Harmony series (49C, 60, 61)

History and Culture series: four courses from 74-77 as follows:

- 76 (18th and 19th centuries)
- 74 (topics in music of the world)
- 75 (music to 1700) or 77 (20th century)
- 75, 77, or another section of 74

**Upper Division**

- One seminar from 170-189
- A minimum of 21 additional units of music major courses from 130-189 and other upper-division music courses with an M suffix. Must include at least three semesters of performance from 140-145, 147-149, and 150A-150H.

Performance courses may be taken at any point in the student’s career. Students are expected to shape their programs according to their particular interests, using the 21 units of music major electives and, if they wish, additional courses from both within and outside the department. Suggested areas of specialization include composition, music of the world, western music history, conducting, performance, music theater, improvisation, theory and analysis, cognitive science, and music technology. At least one semester, students will consult with their advisers to discuss their programs.

**Honors Program.** The Department of Music offers an individualized program leading to the A.B. degree with honors. Students with a grade-point average of 3.3 overall and 3.5 in the major may apply to enroll in the honors program in the last two semesters of their undergraduate study. Under course H195, students undertake a special project exceeding the scope of regular coursework for one or two semesters. Application forms with more detailed criteria for approval can be obtained from the department office and must be submitted by the end of the first week of classes in the semester in which the project is started.
Teaching Training. Consult major advisers.

The Minor

Lower Division

Musicianship 20A

Either Musicianship 20B or Harmony 25A

A survey course: 26AC or 27

Music major courses 49A, Thinking about Music; 49B, Musicianship; and 49C, Harmony may be substituted if the student has placed into 49B on the department musicianship exam. Course 49C must be taken concurrently with or before 49B. See the department web site for details.

Upper Division

A minimum of five upper-division music courses from 100-149 satisfying the following:

- At least one course must be from the 140 series, Performance Ensembles
- At least one course must not be from the 140 series
- Courses that may be repeated for credit may count toward the minor a maximum of three times.

Upper division music major courses 151-189 may be substituted if the student has completed the prerequisites.

All courses taken in the minor must be taken for a letter grade. The College of Letters and Science requires an overall grade of 2.0 in upper division courses applied to the minor program. At least three of the five upper-division courses must be completed at Berkeley.

When students have satisfied the requirements, they should file a petition in the Department of Music office for confirmation that they have completed the minor program. They should bring a copy of their unofficial transcript.

Graduate Programs

The Department of Music offers programs leading to the M.A./Ph.D. and Ph.D. degrees in composition and scholarship, the latter with options in the history and literature of western music and ethnomusicology (that in music education or performance). Applications for admission are considered only once a year for the fall semester; the deadline for application is December 15.

Lower Division Courses

20A-20B. Basic Musicianship. (2:2) Three hours of lecture per week. Prerequisites: 20A is a prerequisite to 20B. Fundamentals of music, including notation, sight singing, ear training, and beginning linear analysis. For general students. (F,SP)

24. Freshman Seminar. (1) Course may be repeated for credit as topic varies. One hour of laboratory per week. Prerequisites: Department placement exam; 49B, or 50A. Formerly 50B. Continuation of diatonic sight singing and ear training, introduction to chromatic sight singing, ear training, keyboard harmony, and score reading involving increasing chromatism. (F,SP) Staff

25. History of Western Music: The 20th Century. (4) Three hours of lecture per week. Prerequisites: Department placement exam. Formerly 50B. Formerly 50A. Formerly 50C. Continuation of diatonic harmony, choral harmonization, and analytical studies. Emphasis on written exercises. (F,SP)

27. Introduction to Western Music. (4) Two hours of lecture and one hour of discussion per week. Devoted to the development of listening skills, and a survey of major forms and types of Western art music. (F,SP)

29. Freshman/Sophomore Seminar. Course may be repeated for credit as topic varies. Sections 1-2 to be graded on a letter-grade basis. Sections 3-4 to be graded on a pass/not passed basis. Prerequisites: Priority given to freshmen and sophomores. Freshman and sophomore seminars offer lower division students the opportunity to explore a topic with a faculty member and a group of peers in a small-seminar setting. The seminars are offered in all campus departments; topics vary from department to department and from semester to semester.

40. Group Lessons. (1) May be repeated once for credit. Three hours of lecture per week. Prerequisites: Restricted to music majors. A course designed for declared majors beginning instruction or with a beginner’s level of proficiency on their instrument. Group classes to focus on voice, strings, winds, and piano. (F,SP) Staff

41. Private Vocal and Instrumental Instruction. (1) May be repeated four times per semester for credit. Three hours of lecture per week. Prerequisites: Restricted to music majors. A course designed for declared majors beginning instruction or with a beginner’s level of proficiency on their instrument. Group classes to focus on voice, strings, winds, and piano. (F,SP) Staff

41A. Carillon Lessons for Advanced Beginning Students. (1) Course may be repeated for a maximum of six units as long as B average is maintained. One-half hour lesson every week, plus participation in the student recital. Prerequisites: 40 or consent of instructor. (F,SP) Staff

41B. Carillon Lessons for Intermediate Students. (1) Course may be repeated for a maximum of 6 units as long as a B average is maintained. One-half hour lesson every week, plus participation in the student recital. Prerequisites: 41A or consent of instructor. (F,SP) Staff

42. Carillon Lessons for Advanced Students. (2) Course may be repeated for a maximum of 6 units as long as a B average is maintained. One hour of private lesson per week, one 10-minute concert each week, a minimum of three Sunday recitals per semester, and participation in the student recital. Prerequisites: 41A, 41B, or consent of instructor. Course is a requirement for those students who are studying for examination by the Guild of Carillonneurs in North America. (F,SP) Staff

43. Introduction to Improvisation. (3) Three hours of lecture per week. Prerequisites: By audition or consent of instructor. This course will serve as an introduction to performance practice and improvisation. Several approaches to improvising will be presented including African American jazz and blues traditions, North Indian Raga, gaming strategies, graphic notation, and conducted improvisation or “sound painting.” Class activities will include improvisation exercises and games and repertoire development. Assignments will include listening to and analysis of recorded and live performances and the creation of student works. (F,SP) Melford

49A. Thinking about Music. (2) Two hours of lecture per week. Prerequisites: Department placement exam; 49B-49C (to be taken concurrently). Introduces proscenium major arts to basic forms and genres of many musics, drawn from the repertoires of Western, North American, Europe, and other world cultures. Explores ideas and concepts that shape the interpretation and the formal analysis of music. Repertory drawn from a reserve of circa 100 pieces available for study on department’s digital music network. (F,SP)

49B. Musicianship. (3) Three hours of lecture per week. Prerequisites: Music Placement Examination. Formerly 50A. Diatonic sight singing, ear training, and keyboard harmony. (F,SP)

49C. Harmony. (3) Three hours of lecture per week. Prerequisites: Music Placement Examination. Formerly 50A. Diatonic harmony, chorale harmonization, and analytical studies. Emphasis on written exercises. (F,SP)

50. Musicianship. (3) Three hours of lecture per week. Prerequisites: Advanced placement in Harmony Placement Exam. 49B, or 50A. Formerly 50B. Continuation of diatonic sight singing and ear training, introduction to chromatic sight singing, ear training, keyboard harmony, and score reading. (F,SP)

51. Musicianship. (3) Three hours of lecture per week. Prerequisites: Advanced placement in Music Placement Examination or 50. Formerly 51A. Sight singing, ear training, keyboard harmony, and score reading involving increasing chromatism. (F,SP) Staff

60. Harmony. (3) Three hours of lecture per week. Prerequisites: Advanced placement in Harmony Placement Exam, 49C, or 60A. Formerly 60B. Advanced diatonic harmony, modulation, introduction to altered chords, chromatic harmony, and analytic studies. Emphasis on written exercises. (F,SP)

61. Harmony. (3) Three hours of lecture per week. Prerequisites: Advanced placement in Harmony Placement Exam or 60. Formerly 61A. Advanced diatonic harmony, advanced modulation, altered chords, chromatic harmony, and analytic studies. Emphasis on written exercises. (F,SP)

72. Introduction to Selected Musics of the World. (4) Course may be repeated for credit. Three hours of lecture and one hour of performance laboratory per week. Focus on performance practice, forms, styles, instruments, and meanings of particular musics from an ethnomusicological perspective. The musics to be studied vary; see offerings in the 130 series for specific course descriptions. Alternate lower division course numbering for lower division majors enrolling in the 130 series. This course will meet lower division major requirement. (F,SP) Brinner, Guilbault, Wade

73. History of Western Music: Music to 1700. (4) Three hours of lecture and one hour of discussion per week. Prerequisites: Department placement examination or 49C (may be taken concurrently). Formerly 171A. Studies in Medieval and Renaissance music. An introduction to music history and criticism, and practice in analytical methods for music of all periods, with emphasis on listening, exercises, and papers. (SP)

74. History of Western Music: The 18th and 19th Centuries. (4) Three hours of lecture and one hour of discussion per week. Prerequisites: 60 (may be taken concurrently). Formerly 70. Music of the 18th and 19th centuries. An introduction to music history and criticism, and practice in analytical methods for music of all periods, with emphasis on listening, exercises, and papers. (F)

77. History of Western Music: The 20th Century. (4) Three hours of lecture and one hour of discussion per week. Prerequisites: Department placement examination. (F,SP) Taruskin

84. Sophomore Seminar. (1,2) Course may be repeated for credit as topic varies. One hour of seminar per week per unit for 15 weeks. One and one-half hours of seminar per week per unit for 10 weeks. Two hours of seminar per week per unit for eight weeks. Three hours of seminar per week per unit for five weeks. Sections 1-2 to be graded on a passed/not passed basis. Sections 3-4 to be graded on a letter-grade basis. Prerequisites: By discretion of instructor. Sophomore seminars are small interactive courses offered only once a year for the fall semester; the deadline to apply is December 15. Prerequisite: Sophomore seminars offer opportunity for close, regular intellectual contact between faculty members and students in the crucial second year. The top-
changes, use of pentatonics and 4ths, playing outside, solo analysis, piano voicings, and an introduction to jazz arranging and composition. Activities will include short writing and playing exercises, transcription and analysis, historical and analytical readings, arranging and composition projects for small ensemble, and three hours of small ensemble rehearsal each week. (F,SP) Dana

116BM. Jazz Theory and Performance 2. (3) Two hours of lecture and two hours of studio per week. Prerequisites: 116, 116M, 116A, or 116M, or consent of instructor; Audition. Advanced concepts in theory and performance in the jazz vernacular tradition, including melodic minor and diminished chords and scales, reharmonization, I got Rhythm changes, Coltrane

128H. The Piano Concerto. (3) Three hours of lecture per week. Prerequisites: 27 or consent of instructor. A study of the development of the 19th-century piano concerto.

128L. Bach and Handel. (3) Three hours of lecture per week. Prerequisites: 27 or consent of instructor. Study of the two leading German composers of the early 18th century whose careers contrast sharply.

128Q. The European/American Art Song. (3) Three hours of lecture per week. Prerequisites: 27 or consent of instructor. Study of the leading German composers of the early 18th century whose careers contrast sharply.

128T. Topics in Contemporary Improvised Music. (3) Three hours of lecture per week. Prerequisites: 27 or consent of instructor. An examination of the development of improvisation in jazz in the 1960s and post-'60s, improvisation, new music and electronic music, a global look at improvisation—fusion and hybrid forms—and the improviser/composer/performer phenomenon in contemporary music. (SP) Melford

128SM. Topics in Contemporary Improvised Music for Musicians. (3) Three hours of lecture per week. Innovations in jazz in the 1960s and post-'60s, improvisation, new music and electronic music, women in improvised music, a global look at improvisation—fusion and hybrid forms—and the improviser/composer/performer phenomenon in contemporary music. (SP) Melford

129. Studies in the Carillon. (3) Three hours of lecture per week. Prerequisites: 27 or consent of instructor. A survey of the history and development of the carillon and its music with a discussion of the various national schools of carillon writing and performing.

130A. African American Music. (3) Three hours of lecture per week. Study of the African-American music tradition from its West-African origins to the various forms at the end of the 19th century.


130BM. African American Music. (4) Three hours of lecture and one hour of discussion per week. Prerequisites: 27 or consent of instructor. Historical and analytical study of African-American music in the 20th century. Emphasis on the evolution of jazz and various forms of popular and religious music.

131A. Music of India. (4) Three hours of lecture and one hour of laboratory per week. Formerly 133B. Includes the classical music traditions of both North and South India (Hindustani and Karnatak music). Emphasis on class listening. (F,SP)

132. Music of the Middle East. (4) Three hours of lecture and one hour of laboratory per week. Formerly 133B. Includes the classical music traditions of both North and South India (Hindustani and Karnatak music). Emphasis on class listening. (F,SP)
133C. Music and Theater in Southeast Asia. (4) Three hours of lecture and one hour of laboratory (devoted to playing Balinese and Javanese Gamelan) per week. For an in-depth study of musical traditions of Indonesia and mainland Southeast Asia with special emphasis on Java and Bali and the central role of music in theater and dance in these countries.

133D. Music of Central Java. (4) Three hours of lecture and one hour of laboratory (devoted to playing the Javanese Gamelan) per week. For an in-depth study of the Central Javanese gamelan tradition including performance contexts, repertoire, vocal and instrumental idioms, modal practice and improvisation in current practice and in historical perspective.

143A. Music of the East Asia Tradition. (4) Three hours of lecture and one hour of laboratory per week. Surveys the music of China, Tibet, Korea, Vietnam, and Japan—cultures which share instrument types but have developed distinctive musical styles.

143B. Music of Japan. (4) Three hours of lecture and one hour of laboratory per week. Traditional classical music of Japan: Shinto ritual music, the imperial court music of the 17th to 20th centuries including works for chorus and orchestra. (F,SP) Kuzma

144. University Chorus. (2) Course may be repeated for credit. Four hours of rehearsal per week. Prerequisites: Admission. The University Chorus performs music primarily from the 17th to the 20th centuries including works for chorus and orchestra. (F,SP) Kuzma

145. University Chamber Chorus. (2) Course may be repeated for credit. Four hours of rehearsal per week. Prerequisites: Audition. A smaller mixed chorus that aims at a professional standard of ensemble singing and explores the lesser-known choral repertory. (F,SP) Kuzma

146. Chamber Music Ensemble. (1) Course may be repeated for credit. One hour of coaching and two hours of ensemble rehearsals per week. Chamber music for strings, winds, piano, percussion, and voice.

147. Contemporary Improvisation Ensemble. (2) Course may be repeated for credit. Three hours of rehearsal and one hour of sectional per week. This ensemble will perform many kinds of contemporary music that call for improvisation including, but not limited to jazz, blues, new music, game pieces, structured improvisations, graduate student compositions, and experimental practices. The class will be devoted to the various skills of keyboard performance that do not involve the solo repertoire. These include but are not limited to piano duets, obbligato keyboard parts to standard instrumental repertoire, Lieder and melodic accompaniment, figured bass (tutti) reduction of orchestral accompaniments for opera arias from the standard vocal repertoire, etc. One of these topics will normally be studied for one full semester (each time at the student’s choice, but in consultation with the faculty). Each student’s study will normally lead to some kind of public performance. (F,SP) Melford

150F. Ensemble Work for Keyboard Players. (1) Course may be repeated for credit. Minimum of two hours of studio per week. Prerequisites: Music majors only. By audition, for experienced keyboard players. The course will include ensemble work in addition to the study of solo repertoire. The student’s program will be worked out in consultation with the faculty in charge of the course. Each student’s studies will lead to some kind of public performance. (F,SP) Rosenak

150G. Guitar Performance. (2) Course may be repeated for credit. Minimum of two hours of studio per week. Prerequisites: Music majors only. By audition, for experienced guitar performers. The program will include ensemble work in addition to the study of solo repertoire. The student’s program will be worked out in consultation with the faculty in charge of the course. Each student’s studies will lead to some kind of public performance. (F,SP) Liderman

150H. Early Music Performance. (2) Course may be repeated for credit. Minimum of two hours of studio per week. Prerequisites: Music majors only. By audition, for performers on early music instruments. The program will include ensemble work in addition to the study of solo repertoire. The student’s program will be worked out in consultation with the faculty in charge of the course. Each student’s studies will lead to some kind of public performance. (F,SP) Liderman


152. Advanced Music Analysis. (3) Three hours of class per week. Prerequisites: 51, 61, and 405D. Conceived as a survey of the skills acquired in 405C, with emphasis on score reading skills (including use of the voice) and the realization of Baroque figured bass lines. Increased emphasis on 20th-century and contemporary practice. Staff

154A. Counterpoint. (3) Three hours of lecture per week. Prerequisites: 61, 151A. Study of species counterpoint. Regular exercises in two and three voices required. Group discussion and analysis. (F)
154B. Counterpoint. (3) Three hours of lecture per week. Prerequisites: 61; 154A. A study of 18th-century counterpoint. Regular exercises required. Analysis of chorale, preludes, two- and three-part inventions, canons, and fugue excursions. (SP) Staff

155. Music Composition. (3) Course may be repeated for credit. Three hours of lecture per week. Prerequisites: 61; 154A-154B recommended. A study of formal problems using contemporary compositional techniques. (F,SP)

156. Studies in Musical Analysis. (3) Three hours of lecture per week. Prerequisites: 61, 151, and 154A. The study of various analytical techniques and their application to important works of music.

157A-157B. Orchestration. (3,3) Three hours of lecture per week. Prerequisites: 61, 151, and 154A. The study of various analytical techniques and idiomatic qualities of all of the individual instruments which comprise the contemporary symphony orchestra followed by a hands-on lab. Staff; 19th-, 20th-, and 21st-century orchestral technique. Analysis of scores and assignments in scoring of selected instrumental combinations.

158. Musical Applications of Computers and Related Technologies. (4) Three hours of lecture and four hours of laboratory per week. Basic computer concepts and techniques of computer-based music research, composition, and performance. Essentials of digital audio signal processing, musical acoustics and psychoacoustics, sound synthesis and analysis, musical databases, use of MIDI, computer programming for music, and computer-aided music analysis. Works from the computer music repertoire will be examined.

161A. Instrumental Conducting. (3) Course may be repeated once for credit. Four hours of class per week. Prerequisites: 61, 151, and 154A. Recommended. Formerly 157A. A study of the basic elements of conducting: physical gesture, score reading, and score analysis. Development of skills with emphasis on conducting and rehearsal techniques applicable to orchestral literature in various languages and musical styles. Preparation of selected works for rehearsal and performance in class. Should be taken in a two-semester sequence.

161B. Instrumental Conducting. (3) Course may be repeated once for credit. Four hours of class per week. Prerequisites: 51 and 61, 152 and 154A recommended. Formerly 160. A study of the basic elements of conducting: physical gesture, score reading, and score analysis. Development of skills with emphasis on conducting and rehearsal techniques applicable to orchestral literature in various languages and musical styles. Preparation of selected works for rehearsal and performance in class. Should be taken in a two-semester sequence.

164. Current Trends in Jazz and Improvisation-Based Musics: A Performance Workshop. (3) Course may be repeated for credit. Three hours of session per week. Prerequisites: 61 and 116(M), or consent of instructor. An ongoing investigation into the role of improvisation in contemporary jazz and creative music through performance, with an emphasis on developing the tools of an improviser as well as an aesthetic and critical knowledge of current practices. Repertoire will include music by a number of contemporary composers, including members of the AACM (Association for the Advancement of Creative Musicians) such as Leroy Jenkins, Joseph Jarman, Henry Threadgill, and other current leading composer/performers including, but not limited to, Marty Ehrlich, Dave Douglas, Jenny Scheinman, Myra Melford, and others. Students will be expected to bring in their own compositions. (F-SP) Melford

164A-164B. Jazz Improvisation. (3,3) Three hours of lecture per week. Prerequisites: Audition, 61 or consent of instructor; 116 recommended. Formerly 164. A study of the fundamental principles of jazz improvisation, including the techniques and ideas of the great improvisers who wish to develop a personal approach to the written word, using the language of contemporary music. Staff

171B. The Performance of Baroque Music. (3) Three hours of lecture per week. Prerequisites: 60 and 76 (may be taken concurrently); experience playing an instrument or singing. A study of music from ca. 1600-1750 with emphasis upon performance practices and styles.

171E. J. S. Bach. (3) Three hours of lecture per week. Prerequisites: 60 and 76 or consent of instructor.

172A. Mozart. (3) Three hours of lecture per week. Prerequisites: 60 and 76 or consent of instructor.

172B. Beethoven. (3) Three hours of lecture per week. Prerequisites: 60 and 76 or consent of instructor; 61 recommended.

173B. Art Song of the 19th Century. (3) Three hours of lecture per week. Prerequisites: 60 and 76 (may be taken concurrently) and 76 or consent of instructor. A study of art song with emphasis upon the music of Schubert, Schumann, and Wolf, with some songs in French and English.

173C. Wagner’s “Ring of the Nibelung.” (3) Three hours of lecture per week. Prerequisites: 61, 76 and consent of instructor. A study of the four operas of Wagner’s Ring Cycle.

173D. Schubert to Brahms. (3) Three hours of lecture per week. Prerequisites: 60 and 76 or consent of instructor; 61 recommended. A study of the contrasting styles represented by Verdi and Wagner, approached through selected operas, literary works, and the composers’ writings.

173F. Verdi and Wagner. (3) Three hours of lecture per week. Prerequisites: 60 and 76 or consent of instructor; 61 recommended. A study of the contrasting styles represented by Verdi and Wagner, approached through selected operas, literary works, and the composers’ writings.

174A. Debussy and Mahler. (3) Three hours of lecture per week. Prerequisites: 61 (may be taken concurrently) and 76 or consent of instructor. Comparison of selected works of Debussy and Mahler.

174C. Stravinsky. (3) Three hours of lecture per week. Prerequisites: 60 and 76 or consent of instructor; 61 recommended. A study of the contrasting styles represented by Verdi and Wagner, approached through selected operas, literary works, and the composers’ writings.

174D. The Performance of Baroque Music. (3) Three hours of lecture per week. Prerequisites: 61 and 130B or consent of instructor. Detailed analysis of specific musical forms and study of their historical development. Unique aspects of the musical organization, improvisational techniques, and value system will be explored.

175. Topics in History, Culture, and Analysis. (3) Course may be repeated for credit. Three hours of lecture per week. Prerequisites: 60 or 76 or consent of instructor. A seminar for upper-division music majors. Topics will change each semester but will always represent a fairly narrow focus on a single issue in the history of the performance of music. The course provides students with an opportunity to go deeply into one subject, to discuss their ideas in a seminar setting, and to carry out a substantial independent research project.

179. Topics in Research and Performance. (3) Course may be repeated for credit. Three hours of lecture per week. Prerequisites: 60 and 76 or consent of instructor. A seminar for upper-division music majors. The primary purpose of this course is to create an environment in which students can combine the research and analysis of music with live performance. The specific topic covered will change each semester. Class time will be divided equally among 1) historical and analytical readings; 2) discussion and analysis of recorded and live performances; and 3) in-class performance. The final project will combine scholarly work and performance in the form of a lecture-recital or collaborative creative project.

H195. Special Study for Honors Candidates in Music. (4) Course may be repeated once for credit. Independent study. Prerequisites: Restricted to seniors with a grade-point average of 3.0 overall and 3.5 in the major. Consent of instructor and the Department Honors Committee. Individual tutorials leading to the completion of a special honors project. (F,SP)

197. Field Studies. (1-3) Course may be repeated for credit. One to three hours of fieldwork per week. Must be taken on a passed/not passed basis. Prerequisites: Music major. Department organized and supervised field programs involving experiences in tutoring and related activities. Students taking the course for the first time will be provided with training suitable to the subject matter being tutored. (F,SP) Staff

198. Group Special Study for Advanced Undergraduates. (2-4) Course may be repeated for credit. Must be taken on a passed/not passed basis. Not to serve in lieu of regular courses of instruction. (F,SP)

199. Supervised Independent Study and Research. (1-4) Course may be repeated for credit. Must be taken on a passed/not passed basis. Not to serve in lieu of regular courses of instruction. Enrollment restrictions apply; see the Introduction to Courses and Curricula section of this catalog. (F,SP)

Graduate Courses

200A. Music Scholarship I. (4) Three hours of seminar per week. Principles of music bibliography, techniques of library research, history of music printing and printing history. Presentation of results in written and oral forms. (F)

200B. Introduction to Music Scholarship II. (4) Three hours of seminar per week. Principles and methods of scholarly research in Western art music, especially history and criticism of music; use of documents, and descriptive aspects. Presentation of results in written and oral forms. (F)

200C. Introduction to Music Scholarship III. (4) Three hours of seminar per week. Introduction to issues and methods in ethnomusicology, from the perspectives of both the social sciences and music. Presentation of results in written and oral forms. (F)

201. Introduction to Computer Music Composition. (3) Course may be repeated for credit. Three hours of lecture and six hours of laboratory per week. Compositional application of digital sound analysis and synthesis, compositional algorithms, interactive control, and audio production techniques. Composition assignments.

201A. Proseminar in Computer Music. (4) Three hours of lecture and four hours of laboratory per week. Prerequisites: Consent of instructor. Overview of the field of computer music and its application to music composition. Pragmatic, procedural, and aesthetic aspects related to the application of newer technologies to music composition will be covered in tandem with contemporary research topics in computer music. Recent computer music composers with their latest technologies will be examined. Students in this proseminar must have advanced musical training and knowledge of the history and repertoire of electro-acoustic music. (F) Campion


203. Seminar in Composition. (4) Course may be repeated for credit. Three hours of seminar per week. Prerequisites: Limited to advanced students of composition. A study of relevant problems and compositional techniques of contemporary music. Original compositions required of students. Group discussion and criticism. (F,SP)

204. Studies in Musical Analysis. (4) Course may be repeated for credit. Three hours of seminar per week. The application of analytical principles to a group of
205. Fugue. (4) Three hours of class per week. Prerequisites: 154B. A study of subjects, answers, counterparts, expositions, episodes and stretti, leading to the writing of complex fugues. Regular written assignments required.

207. Advanced Projects in Computer Music. (4) Course may be repeated for credit. Three hours of lecture and six hours of laboratory per week. Prerequisites: Consent of instructor. Designed for graduate students in music composition, but open to graduate students in related disciplines who can demonstrate thorough knowledge of the history of electro-acoustic music as well as significant experience with computer music practice. Topics and projects are subject to approval of the instructor. (F,SP) Campion

208A. Advanced Music Perception and Cognition. (4) Course may be repeated for credit. Three hours of seminar per week. Experimental studies in Music Perception and Cognition. Research projects required.

209. Advanced Topics in Computer Music. (4) Course may be repeated for credit. Three hours of seminar per week. Technical and musical issues in the design and development of computer-based music systems including digital signal processing for the analysis and synthesis of sound, scheduling of multiple musical control processes, and control and cognitive models, user-interface design, reactive real-time control, and the analysis and representation of musical structure.

210. Graduate Seminar: Composers and Improvisers Workshop. (3) Course may be repeated for credit. Three hours of seminar per week. Prerequisites: By audition or consent of instructor. Weekly forum for the exploration of strategies for composing for improvisers and improvising for composers. A number of approaches including gaming strategies, graphic and alternative notation systems, conduction, and other topics of interest to the students will be explored through performance, listening, analysis, and discussion. Composers will be expected to write for the class and the improvisers to give readings and performances of the works on a weekly basis. (F,SP)

214. Musical Applications of CNMAT Technologies. (3) Six hours of lecture/practical laboratory per week for two weeks. Must be taken on a satisfactory/unsatisfactory basis. Prerequisites: Consent of instructor. This hands-on course will expose students to musical tools developed by the Center for New Music and Audio Technologies (CNMAT). Topics include performative and compositional applications of current research at CNMAT, including sound synthesis and diffusion, high-level control and network applications. (F,SP)

216. Seminar: Studies in Baroque Music. (4) Course may be repeated for credit. Three hours of seminar per week. A highly specialized course in Baroque music. The topic will change each time the course is offered.

217. Seminar: Studies in Classical Music. (4) Course may be repeated for credit. Three hours of seminar per week. A highly specialized study in Classical music. The topic will change each time the course is offered.

218. Seminar: Studies in Romantic Music. (4) Course may be repeated for credit. Three hours of seminar per week. A highly specialized study in Romantic music. The topic will change each time the course is offered.

219. Seminar: Jazz. (4) Course may be repeated for credit. Three hours of seminar per week. A highly specialized study of Jazz. The topic will change each time the course is offered.

220. Topics in Music History and Criticism. (4) Course may be repeated for credit. Three hours of seminar per week. A specialized course in musical criticism. The topic will change each time the course is offered.

240. Historical Readings in Ethnomusicology. (4) Three hours of seminar per week. Formerly 230. Critical analysis of historical sources for ethnomusicalogical research and focus on the historical construction of the musical "Other." Brinner, Guilbaut, Wade

241. Readings in American Musical Cultures. (4) Three hours of seminar per week. Formerly 231. Study of selected American musical cultures in relation to issues and theories pertinent to them.

242. Ethnomusicology Analysis Seminar. (1) Course may be repeated for credit. One hour of seminar per week. Prerequisites: Consent of instructor. Critique of published analyses and approaches to analysis in various musical traditions. Students present analyses based on their individual areas of specialization.

244A. Tools of Ethnomusicalogical Research. (4) Three hours of seminar per week. Collection and organization of research data. Introduction to audio and video recording, photography, database design, interviewing, and writing fieldnotes.

244B. Research Design for Ethnomusicologists. (4) Three hours of seminar per week. Prerequisites: 244A or consent of instructor. Instruction in designing a doctoral research project, writing a dissertation prospectus, and formulating a grant proposal. Focus also on issues such as representation and ethics. Students will normally take this course one semester prior to presenting the prospectus for their doctoral dissertation.

246. Theory and Method in Popular Music Studies. (4) Three hours of seminar per week. Critical survey of the major issues raised and methodologies used in the study of popular music. Selected readings from a wide range of disciplines, including sociology, anthropology, musicology, ethnomusicology, communication, history, political science, economics, and music journalism.

247. Topics in Ethnomusicology. (4) Course may be repeated for credit. Three hours of seminar per week. Formerly 232. A highly specialized course in ethnomusicology. The topic will change each time the course is offered.

248A. Topics in Asian Music. (4) Course may be repeated for credit as topic varies. Three hours of seminar per week. Formerly 248A. A highly specialized course focusing on aspects of music in Asia. The topic will change each time the course is offered.

249. Interpretive Theories and Music. (4) Course may be repeated for credit. Three hours of seminar per week. Readings on interpretive theories dealing with issues such as aesthetics, identity formation, and politics of representation, from a wide range of disciplines, including sociology, anthropology, musicology, ethnomusicology, communication, history, political science, economics, and music journalism.

296. Directed Dissertation Research—Music. (1-12) One to twelve hours of independent study per week. Must be taken on a satisfactory/unsatisfactory basis. Open to qualified students who have been advanced to candidacy for the Ph.D. and are directly engaged upon the doctoral dissertation. (F,SP) Staff

298. Group Special Studies. (2-8) Course may be repeated for credit. Meets to be arranged according to units taken. Open to qualified students for research or creative work on a particular topic. Not to serve in lieu of regular courses of instruction. (F,SP)

309. Special Study. (2-12) Course may be repeated for credit. Meets to be arranged according to units taken. Open to properly qualified graduate students for research or creative work, including work on the doctoral dissertation. Such work shall not serve in lieu of regular courses of instruction. (F,SP)

601. Individual Study for Master’s Students. (1-8) Course may be repeated for credit. Course does not satisfy unit or residence requirements for master's degree. Meets to be arranged according to units taken. Must be taken on a satisfactory/unsatisfactory basis. Prerequisites: For candidates for master's degree. Preparation for the comprehensive or language requirements in consultation with the field adviser. (F,SP)

602. Individual Study for Doctoral Students. (1-8) Course may be repeated for credit. Course does not satisfy unit or residence requirements for doctoral degree. Meets to be arranged according to units taken. Must be taken on a satisfactory/unsatisfactory basis. Prerequisites: For candidates for doctoral degree. Study in consultation with the major field advisor. Questions will be provided in advance for qualified students to prepare themselves for the various examinations required of candidates for the Ph.D. (F,SP)

Professional Courses

300. Professional Preparation for Teaching Assistants in Music. (2-4) Course may be repeated for credit. Meetings to be arranged according to units taken. Must be taken on a satisfactory/unsatisfactory basis. Special study under the direction of a staff member with emphasis on the teaching of undergraduate courses in music. (F,SP)

405. Elementary Piano. (1) Course may be repeated for credit. One hour of lecture per week. Prerequisites: Restriced to music majors or those enrolled in the University Choruses and consent of instructor. Formerly 410A-B. A course in basic vocal techniques, primarily for students in the University Choruses, covering techniques of breathing, pronunciation, and articulation.

Native American Studies

Program and Major Office: 506 Barrows Hall, (510) 642-6725 ethnistics@berkeley.edu Chair: Beatriz Manz, Ph.D.

Professors

Thomas J. Boli, Ph.D.
Patricia Penn Hildén, Ph.D.
† Terry Wilson (EMENUS), Ph.D.

Lecturer

Joseph Myers, J.D.

Undergraduate Major Adviser: Ms. Hopper.

Group Major in Native American Studies

The Native American Studies Program exists to broaden the understanding of students interested in the history, culture, and contemporary situations of Native Americans in the United States. The curriculum has been structured to provide courses that deal with both historical and cultural analysis of Native American Cultures and contemporary legal and social institutions that affect Native American life. The program not only stresses sound academic preparation in the classroom but also allows students the flexibility to take part in community-oriented education through field work or studies directed toward community situations and problems.

The Major

The major program in Native American Studies leads to an A.B. degree. Admission to the program requires written approval from a program academic advisor who will assist in working out an appropriate course of study. Consultation with the advisor for admission into the major should be held no later than the first semester of the junior year.
Students will be required to outline their academic and professional goals.

Major Requirements

Lower Division. Ethnic Studies 10A, 10B; Native American Studies 20A, 20B.

Upper Division. Ethnic Studies 101A, 101B, 103; Native American Studies 110; completion of three elective courses from Native American Studies 100, 101, 104, 120, 145, 150, 151, 155, 159, 175, 176, 177, 178AC, 182, 190; Native American Studies 197 (4 units total).

Honors Program

The Native American Studies Program provides a program leading to the A.B. degree with honors. A student must have junior standing; a 3.5 GPA overall; and a 3.5 GPA in the major. To complete the degree with honors the student will be required to undertake a 4-unit research project (H195) that will be specified as an honors project and will be graded according to standards determined by the faculty as being of honors quality. A committee of three faculty members will establish criteria and grade the project.

The Minor

Requirements: Native American Studies 110; completion of four elective courses from Native American Studies 100, 101, 104, 120, 145, 150, 151, 155, 159, 175, 176, 177, 178AC, 182, 190.

Lower Division Courses

R1A. Native American Studies Reading and Composition. (4) Three hours of lecture and one hour of writing workshop per week. Prerequisites: Satisfaction of English Language Requirement, placement at English 1A. This course introduces students to the genres of Native American literature (written and oral traditions), provides historical and cultural frameworks for understanding, appreciating, and interpreting Native American writings, and develops basic skills in expository and creative writing. Satisfies the first half of the Reading and Composition requirement. (F,SP) Staff

R1B. Native American Studies Reading and Composition. (4) Three hours of lecture and one hour of writing workshop per week. Prerequisites: 1A. Formerly 1B. Course examines Native American written and oral traditions in historical and cultural contexts. Emphasis on literary interpretation and creative and analytical writing, so that students increasingly write from positions of strength. Satisfies the second half of the Reading and Composition requirement. (F)

20A. Introduction to Native American Studies. (4) Three hours of lecture and one hour of tutorial per week. This course explores the interactions, from friendship treaties and land deals to contemporary American governmental policies, between America’s original inhabitants with Europeans and Euro-Americans. Emphasis will be placed on how tribal peoples continue to react to the national myths and policies created by Europeans and Euro-Americans. (F,SP)

20B. Introduction to Native American Studies II: Cultural Practice, Art, and Identity. (4) Three hours of lecture and one hour of discussion per week. This course explores Native American identity. Topics in written and oral traditions in literature, art, dance, theatre, and song. The place of these traditions in the contemporary day will be emphasized as a critique of maintaining and elaborating on Indian identity in the context of colonialism. (SP) Staff

39. Freshman/Sophomore Seminar. Course may be repeated for credit as topic varies. Seminar format. Sections 1-2 to be graded on a letter-grade basis. Sections 3-4 to be graded on a passed/not passed basis. Prerequisites: Permission given to freshmen and sophomores. Freshman and sophomore seminars offer lower division students the opportunity to explore an intellectual topic with a faculty member and a group of peers in a small-seminar setting. These seminars are offered in all campus departments; topics vary from department to department and from semester to semester.

71. Native Americans in North America to 1900. (4) Three hours of lecture per week. Formerly 71A and 71B. An ethnohistorical analysis of America’s original inhabitants and their interactions with Europeans and Euro-Americans emphasizing an Indian perspective of conquest. (F,SP) Staff

72. Native Americans in the 20th Century. (4) Three hours of lecture and one hour of discussion per week. Formerly 50 and 71B. A survey and analysis of issues affecting Native Americans in the 20th century. Course will explore political, economic, and cultural and social/cultural developments between the United States and Indian relations and tribal sovereignty. (SP) Hilden

84. Sophomore Seminar. (1-2) Course may be repeated for credit as topic varies. One hour of seminar per week per unit for 15 weeks. Three hours of seminar per week per unit for five weeks. Sections 1-2 to be graded on a passed/not passed basis. Sections 3-4 to be graded on a letter-grade basis. Consent of instructor. Permission by written request. Sophomore seminars are small interactive courses offered by faculty members in departments all across the campus. Sophomore seminars offer opportunity for close, regular contact between faculty members and students in the crucial second year. The topics vary from department to department and semester to semester. Enrollment limited to 15 sophomores. (F,SP) Staff

90. Freshman Seminar: Myth, Memory and History. (4) Three hours of seminar per week. Prerequisites: Limited to Freshmen. The course will introduce students to different ways of understanding the history of American Indians and to basic resources and research methods for studying the history of Indian tribes. (F,SP) Staff

97. Field Work in Native American Communities. (1-3) Course may be repeated for credit as project varies. Must be taken on a passed/not passed basis. Prerequisites: Consent of instructor and lower division standing. Individual conferences to be arranged. Supervised experiences relevant to specific aspects of the Native American community in off-campus settings. Regular individual meetings with faculty sponsor and written report. (F,SP) Staff

98. Supervised Group Study and Research. (1-3) Course may be repeated for credit. Enrollment is restricted; see the Introduction to Courses and Curricula section of this catalog. Hours to be arranged. Must be taken on a passed/not passed basis. Prerequisites: Consent of instructor. Limited to freshmen and sophomores. Supervised research by lower division students. (F,SP) Staff

99. Supervised Independent Study and Research. (1-4) Course may be repeated for credit as project varies. Three hours of lecture per unit per unit. Must be taken on a passed/not passed basis. Prerequisites: Lower division standing and consent of instructor. Individual conferences to be arranged. The individual student, with the guidance of an instructor, researches an interest not covered in the courses offered in the Program. (F,SP) Staff

Upper Division Courses

100. Native American Law. (4) Three hours of lecture per week. Prerequisites: 71, 72, or consent of instructor. Historical background of the unique relationships between the United States government and Native American tribes, and examination of contemporary aspects of Native American legislation, court cases, and federal, state, and local policies affecting Native American social, political, legal, and economic situations. (F) Staff

101. Native American Tribal Governments. (4) Three hours of lecture per week. Prerequisites: 71, 72, 104. Three hours of tutorial per unit for eight weeks. Sections 1-2 to be graded on a letter-grade basis. Sections 3-4 to be graded on a passed/not passed basis. Prerequisites: Consent of instructor. Formerly 103. The roles of tribal governments in the formation of internal and external policies affecting the lives of Native American people, the basis for their political power historically and in contemporary society, and their structure and functions. (F,SP) Staff

104. Native American Economic Development. (4) Three hours of lecture per week. Prerequisites: 72 or consent of instructor. Examination of U.S. economic policies on tribal lands and resources. Examination of the effect of federal legislation, Bureau of Indian Affairs regulations, and corporate interests on tribal economic development. Consideration of alternative strategies of development.

110. Theories and Methods in Native American Studies. (4) Three hours of lecture per week. Prerequisites: 71 or consent of instructor. Overview of literary theory and criticism, historiography, and social scientific theories and methods useful in the study of Native American literature, history and contemporary tribal groups. Course will develop skills of information gathering and development of theories that structure information. (SP) Staff

120. Topics in Native American Arts. (4) Course may be repeated for credit as topic varies. Three hours of lecture and one hour of discussion per week. This course explores the practice of Native American art forms from the perspective of Native American artists and scholars. Focuses on specific art forms such as dance, music, film, crafts, and other traditions, this course provides a critique of conventional understandings of the relationships of Native American cultural traditions and their place in the world of art. (F,SP) Staff

145. Making History/Making “Indians.” (4) Three hours of seminar per week. Prerequisites: 71 or 72 or consent of instructor. This course explores the ways in which an invented, generic “Indian” has played a variety of roles in master narratives of United States history. We shall examine changes in images of key figures and events constituting “our” collective historical memory. (F,SP) Hilden

149. Gender in Native American Society. (4) Three hours of lecture per week. Prerequisites: Junior or senior standing and completion of 1A-1B. Staff

150. Native American Narratives. (4) Three hours of seminar per week. Prerequisites: Junior or senior standing and completion of 1A-1B. This workshop provides a critical study of various Native American genres as well as writing and discussion of student work. (SP) Staff

151. Native American Philosophy. (4) Three hours of lecture per week. Prerequisites: 71 or consent of instructor. A study of the philosophical and metaphysical aspects of Native American world views, with emphasis on systems of knowledge, explanations of natural phenomena, and relations of human beings to nature through ritual and ceremonial observances. (SP) Hernandez

152. Native American Literature. (4) Three hours of lecture per week. Prerequisites: 71 or consent of instructor. A study of the philosophical and metaphysical aspects of Native American world views, with emphasis on systems of knowledge, explanations of natural phenomena, and relations of human beings to nature through ritual and ceremonial observances. (SP) Hernandez

155. Native American Medicine. (4) Three hours of seminar per week. Prerequisites: 71, Anthropology 3, or consent of instructor. Theories of health and illness, and curing practices, including herbal medicines, ceremony, and healing arts. Emphasis will be placed on the multifaceted approach of the American Indian world views, with emphasis on systems of knowledge, explanations of natural phenomena, and relations of human beings to nature through ritual and ceremonial observances. (SP) Vizenor

158. Native Americans and the Cinema. (4) Three hours of lecture per week. Prerequisites: 72 or consent of instructor. This course will examine the sociological, psychological, and literary aspects of Hollywood moviemakers’ stereotyping of the American Indian through the history of film. The format will include rep-

B prefix=language course for business majors
A prefix=Arts course
H prefix=honors course

*Professor of the Graduate School
Recipient of Distinguished Teaching Award

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History of the Native Americans in California. (4) Three hours of lecture per week. Prerequisites: 71, 72, or consent of instructor. History of the Native Ameri- cans of California is covered. Emphasis is placed on history, culture, art, economics, warfare, and relations with the United States government. Attention will be given to the background and evolution of acculturation up to the present. (SP) Staff

History of Native Americans in the Southwest. (4) Three hours of lecture per week. Prerequisites: 71, 72, or consent of instructor. An historical analysis of the Native American Nations of the southwestern United States. (F,SP) Staff

Topics in Native American History. (4) Course may be repeated for credit. Three hours of lecture and one hour of recitation or discussion per week. This course explores the history of Native Americans from the point of view of Native American historians and scholars. Focused on specific periods and regional case studies the course provides a rereading of much United States history as it has been conceived, set into periods, written, and taught. The chronological scope of the course begins before the European invasions and continues to the end of the 20th century. (F,SP) Staff

178AC. Africans in Indian Country. (4) Three hours of seminar per week. Prerequisites: Students will explore the intersections of Native American and African American histories and communities in the context of the United States which was formerly “Indian Country.” We will read historical accounts, fiction, and primary documents, creating a more complete and nuanced picture of the African-American experience in the Native American world. (F,SP) Staff

182. Native American Music. (4) Three hours of lec- ture per week, plus research per week. Introduces the range and variety of musical forms and styles and the relationship of each to other aspects of human activity, belief, and world view. In particular, the relationship of music and cer- emonial activity will be explored. The course format will include discussion, recordings, and direct contact with musical performances and musicians. (F,SP) Staff

190. Seminar on Advanced Topics in Native Ameri- can Studies. (1-4) Course may be repeated for credit as topic varies. One to four hours of seminar per week. Prerequisites: Consent of instructor. Advanced seminar in Native American Studies with topics to be announced at the beginning of each semester. (F,SP) Staff

195. Senior Thesis. (4) Independent study. Prereq- uisites: Consent of instructor. Writing of a thesis under the direction of member(s) of the faculty. (F,SP) Staff

195R. Native American Studies Honors Course. (4) Course may be repeated for credit. Hours to be ar- ranged. Prerequisites: Must have junior standing; approved by the adviser. The course will entail directed study and completion of a thesis project under the direction of a faculty committee. The project should have originated from a regularly scheduled course in the department. (F,SP)

197. Field Work in the Native American Community. (1-3) Course may be repeated for credit as project varies. Minimum of one hour per week. Prerequisites: Consent of the instructor and approval of the student. Students can pursue field experiences in the area of Native American community setting. Research credits (not to exceed 3) will be awarded for field work. (F,SP)

198. Supervised Group Study. (1-3) Course may be repeated for credit as project varies. Minimum of one hour per week. Prerequisites: Consent of the instructor and approval of the student. Group discussion, research, and report on topics by students. (F,SP)

199. Supervised Independent Study and Research. (1-3) Course may be repeated for credit as project varies. Must be taken on a passed/not passed basis. Prerequisites: upper-division standing and consent of instructor. Individual conferences to be arranged. The individual student, with consent and guidance of an in- structor, researches an interest not covered in the courses offered in the Program. (F,SP)

Natural Resources (College of Natural Resources)

Office of Instruction and Student Affairs: 260 Mulford Hall, (510) 642-0542
Office of the Dean: 101 Giannini Hall, (510) 642-7171
nature.berkeley.edu
Acting Dean: Keith Gilless, Ph.D.
Associate Dean of Instruction and Student Affairs: Sally K. Fairfax, Ph.D.
Associate Dean of Academic Affairs: Lewis Feltham, Ph.D.
Assistant Dean of Instruction and Student Affairs: Kimberly Johnson

Overview

The College of Natural Resources educational programs help our majors become our professional col- leagues in fields that range from biotechnology to medicine and public health, environmental eco- nomics and ecosystem management. All College of Natural Resources majors are built on a strong foun- dation in a biological, physical or social science field, and students can earn a B.S. in one of ten different fields. CNR courses and programs are designed to prepare students with the fusion of scientific literacy as broadly as possible on the campus and in the community. The College offers undergraduates a small college environment and close working re- lationships with faculty mentors and advisors. Those relationships include opportunities for hands on research experience, in the field opportunities, and community service. CNR programs also offer many interdisciplinary approaches to problem solving. College faculty and students work together to understand and evaluate the complex interactions between human and natural systems and to rec- ommend policies that will meet fundamental human needs for healthy food, potable water, and sus- tainable agricultural and energy systems. The col- lege provides extensive opportunities for service learning, civic engagement, and through our alumni-supported Sponsored Projects for Under- graduate Research (SPUR) program, financial sup- port for hands on research experience.

The college has four departments. Agriculture and Resource Economics (ARE) provides a basic foun- dation in economics and policy analysis applied to the conservation and management of natural and environmental resources. Environmental Sci- ence, Policy, and Management (ESPM) brings di- versity of perspectives to bear on environmental issues, from molecular to global scales. Nutritional Science and Toxicology (NST) focuses on research in nutri- tient function, metabolism, and molecular toxic- ity. Plant and Microbial Biology (PMB) centers on plant biology from the molecular to organismal levels, with a direct connection to plant biotech- nology. Each department offers graduate and under- graduate programs allowing students to participate in numerous interdisciplinary graduate groups.

Freshman Applicants

Undergraduate admission is directed by the Office of Undergraduate Admissions. To be eligible, you need to meet the following criteria.

- A minimum cumulative GPA of 3.2
- Have completed courses in English, math, science, and social sciences
- Have taken the SAT or ACT

Transfer Applicants

Transfer applicants must meet the following criteria:

- A minimum cumulative GPA of 3.2
- Have completed courses in English, math, science, and social sciences
- Have taken the SAT or ACT

The College of Natural Resources welcomes transfer applicants to its undergraduate majors. Transfer applicants are welcome to apply to any major in the College of Natural Resources at any time. Visit the website for details on how to apply.

Undergraduate Majors

Since its origin as one of the cornerstones of the University of California, the College of Natural Re- sources has developed multidisciplinary programs that encompass the physical, biological, and social sciences, with a strong commitment to under- graduate teaching. The college is small enough to provide individual focus and attention through faculty advising, small class size, and dedicated fac- ulty. Undergraduate programs include professional programs designed for students with interests in careers like forestry and dietetics. Some majors provide a foundation in sciences that prepares students for graduate and professional work in biology, medicine and other health sciences, economics, or numerous environmental fields. Most are integrative programs that emphasize flexible, innovative approaches. For more information about the ma- jors, contact the Office of Instruction and Student Affairs at 260 Mulford Hall; go to nature.berkeley.edu; or e-mail address@nature.berkeley.edu.

Conservation and Resource Studies (CRS) is ideal for highly motivated students seeking an in- dividualized program. Students work with faculty to

Transferring into the College from other Berkeley Colleges and Schools

Current UC Berkeley students in good academic standing are welcome to apply to the College of Natural Resources. To find out if you qualify, please review the website for details on how to apply.

Transfer Students

Transfer students are welcome to apply to any major in the College of Natural Resources at any time. Visit the website for details on how to apply.
Develop a unique area of study focused on environmental problems requiring cross-disciplinary approaches. Offered by the Department of Environmental Science, Policy, and Management (ESPM); espm.berkeley.edu.

Social and environmental problems are deeply intertwined. The Society and Environment major introduces students to the main approaches and theory for environmental social sciences, including how these conflicts can be addressed to environmental problems, and how social science theories contribute to understanding environmental problems. At the upper-division level there are three major research concentrations. Students are exposed to all three areas and choose to focus in one: U.S. Environmental Policy and Management, Global Environmental Politics, or Environmental Justice and Development. Offered by the Department of Environmental Science, Policy, and Management (ESPM); espm.berkeley.edu.

At the core of Environmental Economics and Policy (EEP) is a fundamental education in economics and statistics, with a focus in mathematics. Students develop a sense of how the choices people make affect the environment, of the conflict between economic development and environmental quality, and how such conflicts can be resolved. Offered by the Department of Agricultural and Resource Economics; are.berkeley.edu.

Environmental Sciences (ES) is a college-level program in both the College of Natural Resources and the College of Letters and the Science. The major provides a broad, comprehensive education in the fundamentals of biology, chemistry, physics, mathematics, and social science. The breadth of this major allows study of the interactions between human activities and biological and physical environments on all scales, from local to global. The major requires major research and a senior research project. Offered by the Environmental Sciences Program (ES); environmentsciences.berkeley.edu.

Forestry and Natural Resources (FNR) is the result of a merger of the former majors in forestry and in resource management. Specializations in natural science and human dimensions are offered in the study of the ecology and management of forest, woodland, and grassland ecosystems. Emphasis in wildlife biology, water policy, fire science, ecosystem restoration, environmental justice, remote sensing and geographical information systems, and rural sociology are available. This major prepares students for graduate school and careers in private consulting, public agencies, non-profit conservation organizations, and private companies, and for professional careers in forestry, wildlife, and range management. Participation in an eight-week summer field program in the northern Sierra Nevada is required. Offered by the Department of Environmental Science, Policy, and Management (ESPM); espm.berkeley.edu.

Genetics and Plant Biology (GPB) combines traditional plant sciences—physiology, biology, and anatomy—with biological disciplines such as genetics, molecular biology, and biochemistry for understanding the role plants play in the global environment. The major includes the spectrum of cellular and organismal aspects of plants, as well as cellular development, molecular genetics, and agricultural biotechnology. Offered by the Department of Plant and Molecular Biology (PMB); pmb.berkeley.edu.

Microbial Biology (MB) is for students interested in search positions in government, industry, and academia. It is excellent for pre-med and pre-vet students, for students interested in biology in general, for students interested in pursing post-graduate work in biology, and for students interested in teaching biology at the secondary-school level. Offered by the Department of Plant and Molecular Biology (PMB); pmb.berkeley.edu.

Molecular Environmental Biology (MEB) introduces students to the organization and function of biological organisms at the molecular, cellular, organismal, and ecological levels, and provides an understanding of the means in which organisms function in their environment. This major is a good choice for pre-med and pre-vet students, for students interested in graduate education in a biological area, as well as students interested in general biology. Offered by the Department of Environmental Science, Policy, and Management (ESPM); espm.berkeley.edu.

Molecular Toxicology (MOL TOX) focuses on the hazardous and beneficial effects of natural and man-made toxic agents. From industrially produced environmental contaminants and designer drugs to naturally occurring herbs and food products, this field of study applies molecular and computational methods so that students better understand how these agents interact with living organisms and what should be done to ensure human health and safety. Offered by the Department of Nutritional Science and Toxicology (NST); nutrition.berkeley.edu.

Nutritional Science (NS) has two areas of specialization: Physiology and Metabolism (Metabolic Biology) and Didactic Training Program in Dietetics. Physiology and Metabolism combines a foundation in natural sciences with advanced coursework in nutrition, the study of nutrient utilization, and food science. Dietetics students at the junior and senior levels take coursework emphasizing nutrition and the application of this knowledge through dietetic internships supervised by the Department of Nutritional Science and Toxicology (NST); nutrition.berkeley.edu.

Major Requirements. Detailed course requirements for each major, along with college requirements for the B.S. degree, are available from the Office of Instruction and Student Affairs, University of California, Berkeley: 260 Mulford Hall #3100, Berkeley, CA 94720-3100. For further information, call the Office of Instruction and Student Affairs at (510) 642-0542, go to nature.berkeley.edu, or e-mail cnrteaching@nature.berkeley.edu.

Minor Programs. The college offers minors in Conservation and Resource Studies (Dept. of ESPM), Environmental Economics and Policy (Dept. of ARE), Forestry (Dept. of ESPM), Nutritional Science (Dept. of NST), and Toxicology (Dept. of NST). For information, please contact the appropriate departmental office.

Undergraduate Advisers. Undergraduate advisers in each major serve as a crucial link between students and the college. Advisers are available throughout the year to assist students in planning a program best suited to their needs and interests. All students must see their adviser at least once each semester for advice in planning their academic programs.

Tele-BEARS Registration. Students must have adviser approval before filing their Tele-BEARS registration lists. The minimum course load is 13 units. Exceptions require: 1) an independent study verification form on file, 2) a part-time status form on file, or 3) authorization from the dean’s office.

Graduate Programs

Academic and professional graduate degree programs available in the College of Natural Resources are listed below.

Inquiries regarding details of the various graduate programs must be directed to the appropriate graduate adviser.

Ad Hoc Interdisciplinary Doctoral Program (Administered by the dean of the Graduate Division)

Agricultural and Environmental Chemistry 111E Koshland Hall, (510) 642-5167
Head Adviser: Benito O. de Lumen, Ph.D.

Agricultural and Resource Economics 203 Giannini Hall, (510) 642-3347
Head Adviser: Jeffrey LaFrance, Ph.D.

Comparative Biochemistry 117 Morgan Hall, (510) 643-2863
Head Adviser: Jack Kirsch, Ph.D.

Environmental Science, Policy, and Management 133 Mulford Hall, (510) 642-6410
Head Adviser: Mary Firestone, Ph.D.

Forestry (M.F.) 133 Mulford Hall, (510) 642-6410
Head Adviser: Kevin O’Hara, Ph.D.

Microbiology 111E Koshland Hall, (510) 642-5167
Head Adviser: Patricia Zambrlyski, Ph.D.

Molecular and Biochemical Nutrition 117 Morgan Hall, (510) 643-2863
Head Adviser: Joseph Napoli, Ph.D.

Molecular Toxicology 117 Morgan Hall, (510) 643-2863
Head Adviser: Leonard Bjeldanes, Ph.D.

Plant Biology 111E Koshland Hall, (510) 642-5167
Head Adviser: Barbara Allen-Diaz, Ph.D.

Organizational Units

Agricultural and Resource Economics Department Office: 207 Giannini Hall, (510) 642-3345
Chair: Jeffrey Perloff, Ph.D.

Environmental Science, Policy, and Management Department Office: 140 Mulford Hall, (510) 643-2626
Chair: Nick Mills, Ph.D.

Environmental Sciences Department Office: 260 Mulford Hall, (510) 642-0542
Co-Director: Sally K. Fairfax, Ph.D.
Co-Director: Wayne Sousa, Ph.D.

Nutritional Science and Toxicology Department Office: 119 Morgan Hall, (510) 642-6490
Chair: Joe Napoli, Ph.D.

Plant and Microbial Biology Department Office: 111K Koshland Hall, (510) 642-5167
Chair: Brian J. Staskawicz, Ph.D.

Lower Division Courses

24. Freshman Seminars. (1) Course may be repeated for credit as topic varies. One hour of seminar per week. Sections 1-8 to be graded on a letter-grade basis. Sections 9-16 to be graded on a passed/not passed basis. The Berkeley Seminar Program has been designed to provide new students with the opportunity to explore an intellectual topic with a faculty member in a small-seminar setting. Berkeley Seminars are offered in all campus departments, and topics vary from department to department and semester to semester. (F,SP)

39. Freshman/Sophomore Seminar. Course may be repeated for credit as topic varies. Sections 1-4 to be graded on a letter-grade basis. Sections 5-8 to be graded on a passed/not passed basis. Prerequisites: Priority given to freshmen and sophomores. Freshman and sophomore seminars offer lower division students the opportunity to explore an intellectual topic with a faculty member and a group of peers in a small-seminar setting. These seminars are offered in all campus departments; topics vary from department to department and from semester to semester. (F,SP)
Near Eastern Studies
(College of Letters and Science)

Department Office: 250 Barrows Hall, (510) 642-3757

Chair: Daniel Boyarin, Ph.D.

Professors

Hamid Algar, Ph.D. Cambridge University. Islamic and Semitic Studies

Robert B. Alter (The Class of 1937 Professor of Hebrew and Comparative Literature), Ph.D. Harvard University. Hebrew literature, modern and biblical

Daniel Boyarin (The Herman P. and Sophia Taubman Professor of Talmudic Culture), Ph.D. Jewish Theological Seminary. Cultural studies in Talmud and Midrash; gender and sexuality; hermeneutics; ancient Judaism and Christianity

Ronald S. Hendel (The Norma and Sam Dabby Professor of Hebrew Bible and Jewish Studies), Ph.D. Harvard University. Ancient Hebrew language, literature, religion, and culture

Chana Kronfled, Ph.D. University of California, Berkeley. Hebrew, Yiddish and historiography

Leslie Peirce, Ph.D. Princeton University. Ottoman history, Ottoman texts, law, gender

Martin Schwartz, Ph.D. University of California, Berkeley. OldMiddleEastern, Indo-European, Zoroastrianism, poetics and Semitics

Muhammad Siddiqi, Ph.D. University of California, Berkeley. Comparative literature, Arabic and Hebrew literatures

Gulthy Azarayaz (Emerita), Ph.D. University of California, Berkeley. Near Eastern art

Ari A. Bloch (Emeritus), Ph.D. Münster University. Arabic and Semitics, Arabic dialectology, Hebrew

HWilliam M. Brinner (Emeritus), Ph.D. University of California, Berkeley. Islamic institutions: Arabic; Judeo-Arabic

Wolfgang J. Heimpel (Emeritus), Ph.D. University of Heidelberg. Mesopotamian cultures, Sumerian

Anne D. Kilmer (Emerita), Ph.D. University of Pennsylvania. Assyriology; Akkadian, Mesopotamian culture, literature, music


James T. Monroe (Emeritus), Ph.D. Harvard University. Classics, ancient Iranian-Anatolian-Arabic literature, comparative literature

David B. Streich (Emeritus), M.A. Cambridge University. Near Eastern art and archaeology

Associate Professors

Marian Feldman, Ph.D. Harvard University. Ancient Near Eastern art, Eastern Mediterranean interconnections, Bronze Age Aegan art and archaeology

Cathleen A. K编织, Ph.D. University of California, Berkeley. Ancient Egyptian language, history, art history

Margaret Lewis (Courses in Arabic, Cuneiform, Akkadian, Cuneiform. University of Chicago. Arabic art and archaeology and culture, Syro-Palestinian and biblical archaeology

Niek Veldhuis, Ph.D. University of Groningen, The Netherlands. Ancient Near East: Akkadian, Babylonian, Mesopotamian, and cultures

Assistant Professor

Shahvadi Ahmadi, Ph.D. University of California, Los Angeles. Persian, Arabic, and Middle Eastern history

Lecturers

Rutie Adler, M.A. University of California, Berkeley; M.A., San Francisco State University. Linguistics, Arabic, English (taught as a second language, Hebrew as a second language)

Ayia Algar, Ph.D. University of California, Berkeley. Turkish language and literature, language pedagogy

Hatem Bazant, Ph.D. University of California, Berkeley. Arabic language, Islamic law


John L. Hayes, Ph.D. University of California at Los Angeles. Semitic linguistics, Arabic, Akkadian, and Sumerian

David Larkin, B.A. University of California, Berkeley. Egyptian, Coptic

Semyon Margoliouth, Ph.D. University of California, Berkeley. Near Eastern archaeology; central Asia

Laurence Pearce, Ph.D. Yale University. Akkadian, Assyriology, Cuneiform

Jaleh Pimaz, Ph.D. University of California, Berkeley. Modern Iranian languages, literature and culture

Sonia S’hi (Coordinator of the Arabic Language Program), Ph.D. University of Edinburgh. Arabic language and literature

Department Overview

Instruction in the Department of Near Eastern Studies is concerned with the languages and civilization of the ancient, medieval, and modern Near East. The department specializes in training in Near Eastern archaeology, art history, Assyriology, Egyptology, Hittitology, Islamic studies, Judaic and Islamic studies, Turkish, Hebrew, Arabic, and Persian. Students in other disciplines, the department provides a wide range of courses to supplement much related fields as anthropology, linguistics, art history, history, political science, comparative literature, and folklore. Lecture courses offered by the department present a comprehensive body of information on past and present Near Eastern civilizations. Many of the courses taught in the department are restricted to a small number of students and thus afford an opportunity for close interaction with the instructing staff.

For a description of interdisciplinary graduate programs in which the department participates, please see the Graduate Education section of this catalog.

Honors Program

With the consent of the undergraduate adviser, a student with an overall grade-point average of 3.3 or higher and a grade-point average of 3.51 or higher in courses completed in the major may apply for admission to the honors program. The requirements of this program include the completion of the honors thesis during the student’s senior year. For a complete description of the program, please inquire at the department office.

The Majors

Note: NES 10 is required for all majors in the department. All courses used to count toward major requirements must be at least 3 units and taken for a grade of C- or higher.

The Major in Near Eastern Languages and Literatures

Major guidelines for each discipline are available in the department office. Portions of the requirements may be fulfilled by related courses in other departments.

In Arabic, Hebrew, and Persian: Required: the elementary courses in the language, or their equivalents. It is recommended that these be taken beginning in the freshman year.

The major requires NES 10 and 24-28 units in upper-division language and literature courses (taught in the language) and upper-division NES courses (taught in English).

In Egyptology: The major requires NES 10 and 30 units in upper-division language and lecture courses.

In the Ancient Egyptian and Near Eastern Art and Archaeology

Ancient Near Eastern Art and Archaeology. NES 10 and 15 are required. NES 18, 25 and Archaeology 2 are recommended. Students must complete eight upper-division courses from a list of courses in the department office. If, and only if, the courses listed are not available during the students’ junior and senior years, the students may select any language or lecture course in the field of Ancient Near Eastern Studies with the approval of the undergraduate adviser.

Egyptian Art and Archaeology. This emphasis requires that students take NES 10, 18, 102A-102B, and Egyptian 100A-100B. NES 15 and Anthropology 2 are highly recommended. In addition, students must take two upper division courses from a list available in the department office. Some background in French, German, and/or Arabic is recommended.

The Major in Near Eastern Civilizations

The emphasis requires NES 10; one course from NES 15, 18, 102A, 102A, 102B, and seven upper-division courses from a list available in the department office. Up to two courses on the list for Islamic civilizations may be substituted with the approval of the NES department undergraduate adviser.

Islamic Civilizations. NES 10 is required. NES 26 and C92 are recommended. Students must complete nine upper division courses in the areas of Religion, History and Culture, Arts and Literature, and Near Eastern Languages, from a list available in the department office. Up to two courses on the list for Ancient Near Eastern Civilizations may be substituted with the approval of the NES department undergraduate adviser.

The Minor

In each of the language minor programs, Option A is open to students with little or no background in the language. Option B is for students who have completed the equivalent of two years of university-level coursework in the language. Students may pursue the major in Ancient Near Eastern archaeology and art history, and a minor in one of the department’s language programs, even though both are administered by the Department of Near Eastern Studies; students may not pursue a major in one of the Near Eastern Studies languages and a minor in another. Students may pursue the major in Near Eastern Languages and Literature and a minor in Ancient Egyptian and Near Eastern Civilizations. For lists of courses which may be taken to fulfill the minor course requirements, please inquire at the department office.

In Arabic, Option A. Required courses: Arabic 20A-20B (in addition to Arabic 1A-1B). Five upper division courses: Arabic 100A; two one-semester courses in Arabic (in Arabic); two one-semester courses in Arabic culture/history.

In Arabic, Option B. Required courses: Seven upper division courses: five one-semester courses in Arabic language or literature (in Arabic); two one-semester courses in Arabic culture/history.

In Hebrew, Option A. Required courses: Hebrew 20A-20B (in addition to Hebrew 1A-1B). Five upper division courses: Hebrew 100A-100B, Hebrew 104A-104B; a one-semester course in Hebrew culture/history.

In Hebrew, Option B. Required courses: Seven upper division courses: five one-semester courses in Hebrew language or literature (in Hebrew); two one-semester courses in Hebrew culture/history.

The Minor in Persian, Option B. Required courses: Seven upper division courses: five one-semester courses in Persian literature (in Persian); two one-semester courses in Persian culture/history.

The Minor in Turkish, Option A. Required courses: Turkish 1A-1B, 2A-2B, 3A-3B, 5A-5B, 7A-7B (depending on the student’s major language). Five upper division courses in Turkish culture/history.

The Minor in Ancient Egyptian and Near Eastern Civilizations. Required courses: NES 15 or 18, and five semesters of upper division courses chosen from a list available at the department office. NES 25 and 34 are recommended.

Graduate Programs

Graduate programs leading to the M.A. and Ph.D. degrees are offered in the following languages and literatures: Arabic, Hebrew, Persian, and Turkish. These degree courses are also offered in the following fields of Near Eastern Studies: archaeology, art history, cuneiform, Biblical and Judaic studies, Old Iranian studies, comparative Semitics, Egyptology, and Islamic studies.

Graduate Degrees

Applicants for graduate study should have fulfilled the equivalent of the departmental requirements for the A.B. in their proposed area of study. The department encourages its own graduate students to take advantage of courses in other departments which are relevant to their disciplines and fields of study. Upon approval by the graduate advisor, such courses may be counted as fulfilling portions of the departmental coursework requirements for graduate degrees.

The M.A. Degree. The M.A. is obtained according to the Graduate Division’s Plan II. A complete description of Graduate Division requirements for this degree is found in the Graduate Education section of this catalog. In addition to the requirements outlined for Plan II, students must pass a reading examination in either French or German (another language may be substituted on approval of the major advisor).

Plan I requires at least 24 units of coursework. For students with archaeological programs, at least 12 of their 24 units must be in 200-series courses in the major and three semesters of work in a Near Eastern language other than the student’s major language. For students in archaeology and art history programs with an Egyptian emphasis, at least 12 of the 24 units must be in 200-series courses and three semesters must be drawn from NES 220A-220B and 223A-223B. For students in archaeology and art history programs with a Near Eastern emphasis, at least 12 of the 24 units must be in 200-series courses and three semesters must be drawn from NES 220A-220B.

The Ph.D. Degree. Students must have completed an appropriate M.A. program to be eligible for the Ph.D. program. Admission to candidacy for the Ph.D. degree depends on successful completion of the following requirements:

1) Ph.D. coursework;
2) reading examinations in French and German (proficiency in a European or other modern language germane to the student’s field of emphasis may be substituted on approval of the graduate advisor and the student’s advisory committee);
3) proficiency in one or two Near Eastern languages, as required for the student’s field of study (for language majors, proficiency will be tested through the written preliminary examinations, which will cover at least two Near Eastern languages. For Egyptian archaeology and art history majors, proficiency will be tested through a written examination in Egyptian and/or Coptic which must be completed and passed no later than the semester before the student’s qualifying examination. Archaeology and art history students (in Egyptian archaeology) who have not completed a minimum of two years of coursework in an ancient or modern Near Eastern language must pass a proficiency examination in an ancient or modern Near Eastern language before taking the preliminary examinations);
4) fieldwork (for art history and archaeology majors);
5) written preliminary examination and the oral qualifying examination; and
6) a prospectus of the dissertation approved by the student’s proposed Ph.D. dissertation committee.

After admission to candidacy, the student is to fulfill the requirements for the dissertation as outlined in the Graduate Education section of this catalog.

For further information on these graduate programs, contact the graduate assistant in 250 Barrows Hall.

Special Programs

The Joint Doctoral Program in Near Eastern Religions. This program, which combines the faculty and library resources of the University of California, Berkeley, and the Graduate Theological Union, is a flexible course of study, probing in depth the ancient Near Eastern literatures, literatures and thought patterns of the ancient Near East and Egypt, with emphasis on the various forms of religious expression indigenous to their cultures. Applicants must have the Ph.D. degree as their goal. They should possess an M.A. or the equivalent in Near Eastern Studies or a related field and should have proficiency in two appropriate ancient languages equivalent to that obtainable through an undergraduate degree in those languages. Applicants must be admitted into both the Graduate Theological Union and the University of California, Berkeley, and the degree is conferred jointly by both institutions.

Joint Doctoral Program in Jewish Studies. This program is open only to students who intend to work toward the Ph.D. degree. Students must acquire professional competence in a historical period and an interdisciplinary approach. Interdisciplinary approaches will be strongly encouraged. Applicants will be admitted into both the Center for Jewish Studies of the Graduate Theological Union and the University of California. The degree is conferred jointly by both institutions.

The Graduate Program in Ancient History and Mediterranean Archaeology (see Index for the location of a full description of this program) is available to students with backgrounds in ancient history and archaeology. The ancient studies faculty of the Department of Ancient History and Near Eastern Studies provide many of the faculty members of the faculty group for this program.

Near Eastern Studies

Courses listed under Near Eastern Studies are taught in English. Courses listed under language headings are language courses and assume an appropriate level of knowledge of that language. The online Schedule of Classes issued before each semester, and listings posted at the department office, provide further detailed information about courses offered by the Department of Near Eastern Studies, including when and by whom each course will be given.

Lower Division Courses

R1A-R1B. Reading and Composition in Ancient Near Eastern Texts. (4;4) Three hours of lecture and one hour and one conference period per week. Prerequisites: UC Entry Level Writing Requirement or UC Analytical Writing Placement Exam. Expository writing is based on the analysis of selected masterpieces of the ancient Near East in translation, such as the Bible, Code of Hammurapi, Epic of Gilgamesh, etc. Satisfies the Letters and Science Reading and Composition requirement.

R2A. Reading and Composition in Modern Middle Eastern Texts. (4;4) Three hours of lecture and one hour conference per week. Prerequisites: UC Entry Level Writing Requirement or UC Analytical Writing Placement Exam. Expository writing is based on analysis of selected Middle Eastern literatures in translation, such as Arabic, Hebrew, Persian, Turkish prose and/or poetry. Satisfies the first half Reading and Composition requirement.

R2B. Reading and Composition in Modern Middle Eastern Texts. (4;4) Three hours of lecture and one hour conference per week. Prerequisites: UC Analytical Writing Requirement or UC Analytical Writing Placement Exam. Expository writing is based on analysis of selected modern Middle Eastern literatures in translation, such as Arabic, Hebrew, Persian, Turkish prose and/or poetry. Satisfies the second half of the Reading and Composition requirement.

10. Introduction to the Near East. (4) Three hours of lecture and one hour of discussion per week. The background and present status of the ethnic and religious groups in the Arab states, Turkey, Israel, and Iran.

15. Introduction to Near Eastern Art and Archaeology. (4) Three hours of lecture and one hour of discussion per week. The ancient Near East (present-day Iran, Iraq, Syria, Jordan, Lebanon, Israel, and Turkey) is considered the cradle of civilization. Here in Mesoopotamia, the world’s first cities arose, writing was invented, armies forged the earliest empires, and complex religious beliefs were expressed in art and architecture. This course surveys the major archaeological sites and the earliest settlements to the conquest of the Near East by Alexander the Great in 330 BCE. (F. SP) Feldman

18. Introduction to Ancient Egypt. (4) A general introduction to ancient Egypt, providing overview coverage of ancient Egyptian culture and society (history, art, religion, literature, language, social structure, Egyptian archaeology (pyramids, tombs, mummmies, temples, cities, monuments, daily life), and the history and development of the modern discipline of Egyptology. Assumes no prior knowledge of subject. Almost all lectures are illustrated extensively by slides. Discussion sections are held in the Phoebe Hearst Museum of Anthropology, which has the best collection of ancient Egyptian artifacts west of Chicago.

24. Freshman Seminars. (1) Course may be repeated for credit as topic varies. One hour of seminar per week. Sections 1-2 to be graded on a letter-grade basis. Sections 3-4 to be graded on a pass/No Pass basis. The Berkeley Seminar Program has been designed to provide new students with the opportunity to explore an intellectual topic with a faculty member in a small-seminar setting. Berkeley Seminars are offered in all campus departments, and topics vary from department to department from quarter to quarter.

C26. Introduction to Central Asia. (3) Three hours of lecture per week. Formerly 26. This course will introduce the student not only to ancient and modern Central Asia, but also to the role played by the region in the
shaping the history of neighboring regions and regimes. The course will outline the history, languages, ethnicities, religions, and archaeology of the region and will acquire the historical foundations of some of the political, social and economic challenges for contemporary post-Soviet Central Asian republics. Also listed as Geography CSS.

84. Sophomore Seminar, (1,2) Course may be repeated for credit as topic varies. One hour of seminar per week per unit. Must be taken on a pass/not pass basis. Sections 1-2 to be graded on a letter-grade basis. Prerequisites: At discretion of instructor. Sophomore seminars are small interactive courses offered by faculty members or departments across the campus. Sophomore seminars offer opportunity for close, regular intellectual contact between faculty members and students in the crucial second year. The topics vary from department to department and semester to semester. Enrollment limited to 15 sophomores.

98. Directed Group Study for Lower Division Students, (1-4) Course may be repeated for credit. Enrollment is restricted; see the Introduction to Courses and Curricula section of this catalog. One contact hour per week per unit. Must be taken on a pass/not pass basis. Prerequisites: Lower division standing. Student must submit a written proposal with consent of instructor to the department chair for approval. Topics vary.

99. Supervised Independent Study, (1-4) Course may be repeated for credit. Enrollment is restricted; see the Introduction to Courses and Curricula section of this catalog. One contact hour per week per unit. Must be taken on a pass/not pass basis. Prerequisites: Lower division standing; 3.0 GPA and consent of instructor. Student must submit a written proposal to the chair of the department for approval. Topics vary.

Upper Division Courses

102A-102B. Archaeology of Ancient Egypt, (4; 4) Three hours of lecture and one hour of museum section per week for 10 weeks. Two hours of seminar per week per unit for 10 weeks. Three hours of seminar per week per unit for eight weeks. Three hours of seminar per week per unit for five weeks. Sections 1-2 to be graded on a pass/not pass basis. Prerequisites: Lower division standing. Student must submit a written proposal with consent of instructor to the department chair for approval.

103. Religion of Ancient Egypt, (3) Three hours of lecture per week. Three hours of seminar per week. Offered topics will vary. Prerequisites: Consent of instructor. A survey of the religious beliefs of the ancient Egyptians, based primarily upon the written sources. Also listed as Religious Studies C103.

104. Babylonian Religion, (3) Three hours of lecture per week. A survey of Babylonian religious beliefs and practices based upon original texts and monuments. Also listed as Religious Studies C104.

105A-105B. Ancient Mesopotamian Documents and Literature, (3; 3) Three hours of lecture per week. A representative survey of original 3rd-1st millennium Cuneiform texts in translation. A. The Sumerian religious and scholastic tradition; myths of creation, hymns, epics and early historical material. B. Assyro-Babylonian historical and legal documents and private and royal correspondence; kingship and the cult; divination, astrology and magic; the classic literary works.

106A-106B. Art and Architecture of Ancient Egypt, (4; 4) Three hours of lecture and one hour of discussion per week. Prerequisites: A, 106A or equivalent consent of instructor. B, 106A or consent of instructor. Stylistic and iconographic study of Egyptian art and architecture from Predynastic times through the end of the pharaonic period. Discussion sections will focus on Egyptian material in the Hearst Museum collection.

A. Will cover the period from Predynastic times until the end of the First Intermediate Period (ca. 3000-2000 BC).

B. Will consider the period from the end of the First Intermediate Period through the Graeco-Roman Period (ca. 2000 BC-1st century AD).

108. Topics in the Ancient Mediterranean World, (2-4) Course may be repeated for credit as topic varies. Three hours of lecture or seminar per week. Three units awarded when course is given as a lecture course. Four units are given if the student has not taken a seminar and the student completes a seminar paper; two units are given as a seminar and there is no seminar paper. Prerequisites: Consent of instructor. Varying topics in the cultural connections of the ancient Mediterranean world from the fourth millennium B.C.E. to late antiquity. Typical themes/topics might include: ideologies of gender and sexuality; comparative religions or literatures; archaeological and/or historical interconnections.

109. Mesopotamian History, (3) Three hours of lecture per week. Once, Mesopotamian political, cultural, and economic history from the invention of script to the Persian conquest of Babylon will be presented in survey, and one topic will be selected for in-depth study.

110. Art and Archaeology of Ancient Egypt in the First Intermediate Period, (4) Three hours of lecture per week. Prerequisites: 18 or equivalent or consent of instructor. The course surveys the art and/or archaeology of ancient Egypt in the first millennium B.C. It covers ancient Egyptian material culture of the Third Intermediate, Late, Ptolemaic, and Early Roman periods.

111. Survey of Ancient Egyptian History, (4) Students will receive no credit for 112 after taking 101A-101B; 2 units after taking 101A or 101B. Three hours of lecture and one hour of discussion per week. Prerequisites: 18 or equivalent or consent of instructor. A concise survey of Ancient Egyptian history from Late Predynastic times to the conquest of Alexander the Great.

113. Gilgamesh: King, Hero, and God, (4) Three hours of lecture per week. The most famous of Babylonian heroes is Gilgamesh, King of Uruk. The Gilgames Epic, recorded on 12 tablets in cuneiform, follows him in his quest for fame and eternal life. In this course, we will read the Epic as well as several earlier texts around the same character. Moreover, we will read additional ancient texts that elucidate one or another aspect of the Epic. We will follow the tradition described around Gilgames and show how his fame was used for literary, religious, and political purposes.

Finally, we will look at some of the modern Gilgamesh interpretations.

112A. The Art of Ancient Mesopotamia: 3500-1000 BCE, (4) Three hours of lecture and one hour of discussion per week. The art and architecture of early Mesopotamia will be explored in terms of the social, political, and cultural context of ancient Sumer, Babylonia, and Assyria during the period of urbanization and early kingdoms. The course will cover the early history of the region as well as the development of Mesopotamian cities, religions, and political systems. Topics may include the human and divine aspects of Mesopotamian gods and goddesses, resource procurement, trade contacts, the Trojan War, and the rise of the Hittites. A general theme throughout the course will be the issue of deities and indigenous, regional cultures and the ways in which they interacted with the broader ancient world.

112B. The Art of Ancient Mesopotamia: 1000-330 BCE, (4) Three hours of lecture and one hour of discussion per week. The art and architecture of later Mesopotamia will be explored in terms of the social, political, and cultural context of the great empires of Assyria, Babylon, and Persia. The course will cover the developments of the Assyrian and neighboring regions from 3500-1000 BCE with an emphasis on the development of visual narrative, the use of art in the expression of authority and legitimacy, and artistic interconnections between cultures. Collections on campus or in the area will be incorporated whenever possible. Also listed as History of Art C120B.

112B. Topics in Islamic Art, (4) Course may be repeated for credit as topic varies. Three hours of lecture and one hour of discussion per week. The course will cover the development of visual narrative in Islamic art. Collections on campus or in the area will be incorporated whenever possible. Also listed as History of Art C121B.

122. Archaeology of the Southern Levant, (3) Three hours of lecture per week. The course provides a general survey of the archaeology of the Southern Levant (Israel, Jordan, Lebanon, Southern Syria, Palestine) from Natufian through Persian times. The material culture of the region is emphasized, along with cultural context, as examples which reveal the manifold issues and afford our understanding of the archaeological record.

125. Archaeology and the Bible, (4) Three hours of seminar and one hour of section per week. This seminar-type class explores the continually evolving and sometimes contentious relationship between archaeology and the Hebrew Bible/Old Testament. It begins with a basic overview of the characteristics of archaeology, “biblical archaeology,” history, the biblical text, and biblical studies. The class considers both topics of current research and debate, focusing on how the particular theoretical and interpretive concerns relate to specific archaeological finds (and vice versa). The class employs a combination of pedagogical approaches, including traditional lectures (with and without slides), individual and group presentations and/or debates, discussions, videos, and, where relevant, one or more field trips to relevant museum collections.

126. Silk Road Art and Archaeology, (3) Three hours of lecture per week. The course will outline art and archaeology of the Silk Roads from the fifth century BCE to the 10th century CE. A number of specific sites located along the Silk Roads will be selected and explored in depth, as examples which reveal the manifold cultural currents along the trade routes. Special attention will be paid to the eclecticism in Silk Road cultures brought about by the movement of peoples and merchants which facilitated the intermingling of cultures along these trading routes of various ideas, cultural forms, art styles, and religious concepts. The social and political underpinnings of this eclecticism will be examined.

127. Art and Archaeology of Ancient Syria, (4) Three hours of lecture per week. The course provides a broad introduction to the cultures of ancient Syria from the Neolithic period to 500 BCE. The diversity of cultures and their development over time will be assessed in light of the built environment and artistic production. Emphasis is placed on interpreting the material culture of the region within its social and political contexts.

128. The Art and Archaeology of Ancient Turkey, (4) Three hours of illustrated lecture per week. This course explores the art and archaeology of ancient Turkey from the Neolithic period to the time of the Roman emperor Hadrian’s conquest of the Near East (330 BCE). The survey will include geographic and historical considerations and will focus in particular on the ancient sites and monuments. Topics of discussion may include the Anatolian mother goddess, resource procurement, trade contacts, the Trojan war, and the rise of Phrygia and Lydia. A general theme throughout the course will be the issue of deities and indigenous, regional cultures and the ways in which they interacted with the broader ancient world.

130. Minoan and Mycenaean Art, (4) Three hours of lecture and one hour of discussion per week. This course analyzes the art, architecture, and archaeology of prehistoric Greece, concentrating on the Minoan and
Myoenaeal palatial arts of the Bronze Age (3000-1200 BCE). The evocative yet still enigmatic remains of palaces and funerary complexes, frescoes and vase paintings, and the works of art and literature that have survived, will be closely examined in terms of their forms and cultural contexts. The place of prehistoric Greece in the international world of the eastern Mediterranean will also be explored. Also listed as History of Art C140.

131. Aspects of Biblical Religion. (4) Three hours of lecture per week. The teachings of ancient Israel's priests, prophets, and sages on various universal problems.

C133. Judaism in Late Antiquity. (4) Three hours of lecture and one hour of discussion per week. This class will examine the emergence and development of Christianity, institutions, thought, and literature. Also listed as Religious Studies C133 and Undergrad Interdisciplinary Studies C153.

C135. Jewish Civilization I: The Biblical Period. (4) Three hours of lecture and one hour of discussion per week. This is the first course in a four-course sequence on Jewish culture and civilization. It covers the biblical period and the period up to the destruction of the second temple. This course will explore the current state of our knowledge, including the legacy of ancient Near Eastern myth and religion, the history of Hebrew literature and the history of the Bible, the history of Jewish literature, and the history of other Jewish literatures.

147. The Rise of Islamic Civilization. (4) Three hours of lecture and one hour of discussion per week. A survey of Islamic civilization in the Middle East during the seventh century. Topics include the spread of Islam in Arabia and the role of the Prophet Muhammad; the rapid rise of an Islamic empire and its effects on the societies it governed; the creation of an Islamic civilization that was religious, political, and intellectual; and the debates it engendered; contact with Europe and Asia through trade, Crusades, and nomadic conquest; the contributions of non-Muslims, women, slaves.

152. Cultural Encounters in Modern Arabic Literature. (3) May be repeated for credit when subject matter varies. Three hours of lecture per week. This course is organized around two broad but inter-related issues: the quest for identity and the representation of the "other" in modern Arabic literature. Central to both concerns is the role of colonialism, nationalism, and gender in modern Arabic literature and Arab culture in general.

155. Wonder and the Fantastic: The Thousand and One Nights in World Literary Imagination. (3) Three hours of lecture per week. After studying the tales of the Thousand and One Nights, the course will explore their structure and how they fit into the genre of folk literature, we will investigate how the Nights was translated, translated, and received in Europe, as a window on 19th-century gender and colonialism. We will consider the "other" and its representation in the "oriental" other. How the Nights was creatively manipulated by Western writers will be studied, as will the influence of these tales on modern Arabic literature itself. Several examples of how the Nights have been represented in Western films will be considered. All works will be read in English translation.

160. Religions of Ancient Iran. (3) Three hours of lecture per week. Principally devoted to Zoroastrianism and Manichaeism but with some attention to Indo-Iranian religions and mystery religions for the history of Hellenistic Gnosticism, Judaism, and Islam.

162A-162B. History of Persian Literature. (4;4) Three hours of lecture and one hour of discussion per week. Near Eastern Studies 162A-162B offer a comprehensive introduction to the main currents in Persian literature from the 10th century to the contemporary period. They introduce students to various genres, period styles, and crucial formal and thematic elements necessary to the understanding of Persian literature. While 162A deals with classical Persian literature, 162B deals with Persian literature since the advent of modernity in Persian-speaking lands, namely the 19th century. Both courses emphasize the impact of social factors, period styles, and intellectual currents on Persian literary production. The course is taught in English. Knowledge of Persian is desirable but not required.

172. Harems and Court Cultures. (4) Three hours of lecture/discussion per week. This course explores configurations of power and the role of women in the eastern courts of the modern Ottoman and Persian empires, and, for comparative purposes, in courts of China, South Asia, Mesoamerica, and Europe. It examines the status of women in harems, the role of the hareem in the public life of the sultanate, and the role of the hareem in the political and religious life of the sultanate. The course explores the harem as a site of cultural exchange and as a site of political and religious authority. The course will focus on the role of the hareem in the public life of the sultanate, and the role of the hareem in the political and religious life of the sultanate. The course explores the harem as a site of cultural exchange and as a site of political and religious authority. The course will focus on the role of the hareem in the public life of the sultanate, and the role of the hareem in the political and religious life of the sultanate.

H195. Senior Honors. (2-4) Must be taken on a pass/fail basis. Prerequisites: Limited to senior honors candidates. Directed study centered upon preparation of an honors thesis.

198. Directed Group Study for Upper Division Students. (1-4) Course may be repeated for credit. Must be taken on a pass/fail basis. Prerequisites: Limited to senior honors candidates. Directed study centered upon preparation of an honors thesis.

199. Supervised Independent Study and Research. (1-4) Course may be repeated for credit. Must be taken on a pass/fail basis. Prerequisites: Limited to senior honors candidates. Directed study centered upon preparation of an honors thesis.

200. Graduate Proseminar. (1) One to two hours of seminar per week. Introduction to the academic profession of Near Eastern studies. This course will survey the various disciplines and subfields contained under the

B prefix=language course for business majors
C prefix=course satisfies R&C requirement
H prefix=honors course
R prefix=course satisfies R&C requirement
AC suffix=course satisfies American Cultures requirement

*Professor of the Graduate School
†Recipient of Distinguished Teaching Award
Arabic

Lower Division Courses

1A-1B. Elementary Arabic. (5,5) Five hours of recitation per week. Prerequisites: 1A is a prerequisite to 1B. This course emphasizes the functional usage of Arabic in the four language skills: listening, speaking, reading, and writing. Audio, video, and reading materials are presented from the beginning, and students are encouraged to be creative with the language in and out of class.

1AW-BW. Elementary Arabic Distance Learning. (5,5) Five hours of web-based lecture per week. Prerequisites: Visiting UC students only (i.e., UC students not at UCB). Arabic Without Walls covers the same course content as Arabic 1A-1B, delivered in an online format. This course introduces students to Modern Standard Arabic and emphasizes communicative competence in the four language skills: listening, reading, speaking, and writing. The new course format contains both print and web materials for three course content components: (1) Al-Kitaab Part 1 and Alif Baa (Kristen Brustad, Mahmoud Al-Batal and Abbas Al-Tonsi, 2004), (2) QuickTime movie interviews with Arabic native speakers, and (3) expanded cultural presentations and web activities not available in Al-Kitaab Part 1. These components are designed to complement each other in a integrated format. Students work simultaneously with the Arabic 1A-1B textbook and DVDs, the web materials, and audio chat activities. Students who complete this course will be prepared to enter Intermediate Arabic 20A at UC Berkeley or at another institution. (F,SP) Shiri

15A-15B. Spoken Arabic. (3,3) Course may be repeated for credit if different dialect is offered. Three hours of lecture per week. Formerly 101A-101B. Practice in speaking an Arabic dialect.

20A-20B. Intermediate Arabic. (5,5) Five hours of recitation per week. Prerequisites: 1B or equivalent; 20A is a prerequisite to 20B. Authentic reading in modern standard and classical Arabic and the understanding and application of grammatical and stylistic rules are emphasized. Students deliver oral presentations and write academic papers in Arabic.

Upper Division Courses

100A-100B. Advanced Arabic. (3,3) Three hours of lecture per week. Prerequisites: 20B. 100A is prerequisite for 100B. Intensive reading and analysis of texts of different genres. Guest lectures, films, documentaries, oral presentations, research papers. Formal and informal styles of writing and correspondence. Extensive vocabulary building.

104B. Classical Arabic Prose. (3) Course may be repeated for credit as topic varies. Three hours of lecture per week. Prerequisites: 20B or equivalent. This course is designed for students who wish to concentrate on various examninations required of Arabic of the classical period and Islamic civilization. Reading and analysis of literary texts of various genres, including essays, biography, and travel literature.

105B. Classical Arabic Poetry. (3) Course may be repeated for credit as topic varies. Three hours of lecture per week. Prerequisites: Arabic 20B or equivalent. Readings and analysis of poetry from the pre-Islamic through the classical periods.

107. Arabic Historical and Geographical Texts. (3) Course may be repeated for credit as topic varies. Three hours of lecture per week. Prerequisites: 20B or equivalent. Readings from the classical works of Islamic geographers and from contemporary scholarship. Development of historiography.

108. Islamic Religious and Philosophical Texts in Arabic. (3) Course may be repeated for credit as topic varies. Three hours of lecture per week. Prerequisites: Arabic 107 or equivalent. Readings from the classical works of Islamic philosophers and religious writers (Qur'an, Huran, Hadith, Sira, commentary) and in theological, mystical, and philosophical texts.

111A. Survey of Arabic Literature (in Arabic). (3) Course may be repeated for credit. Three hours of lecture per week. Prerequisites: 100A. This course is designed for students engaged in research for the doctoral comprehensive or language requirements in consultation with the graduate adviser. Units may not be used to meet either unit or residence requirements for a master’s degree.

602. Individual Study for Doctoral Students. (1-8) Course may be repeated for credit. Three hours of seminar per week. Research into a major aspect or problem of Mesopotamian or Near Eastern civilization. May be repeated for credit. Three hours of seminar per week. Two units to be graded on a satisfactory/unsatisfactory basis. Individual study in the comprehensive or language requirements in consultation with the major field adviser, intended to provide an opportunity for qualified students to prepare a comprehensive examination or to complete the dissertation of candidates for the Ph.D. May not be used for unit or residence requirements for the doctoral degree.

220A. Seminar in Near Eastern Art. (4) Course may be repeated for credit. Three hours of seminar per week. Prerequisites: Graduate standing or consent of instructor. Graduate seminar on specific aspects of the arts of Western and Central Asia. Topic to be announced. Credit for four hours meeting. Students who take two semesters in succession may be assigned credit and grade at the end of the sequence.

223A-223B. Seminar in Near Eastern Archaeology. (4,4) Course may be repeated for credit. Three hours of seminar per week. Research into a major aspect or problem of Mesopotamian or Near Eastern civilization. May be repeated for credit. Three hours of seminar per week. Research into a major aspect or problem of Mesopotamian or Near Eastern civilization. May be repeated for credit.

290. Special Studies. Course may be repeated for credit. Prerequisites: Consent of instructor. Students may enroll in more than one section of 290, but the total number of units of Special Study in any one semester may not exceed 12.

290A. Near Eastern Studies. (1-5)

290B. Arabic. (1-5)

290C. Cuneiform. (1-5)

290D. Egyptian. (1-5)

290E. Hebrew. (1-5)

290F. Iranian. (1-5)

290G. Semitics. (1-5)

290H. Turkish. (1-5)

295. Supervised Field Research in Archaeology. (2-12) Course may be repeated for credit. Two to twelve hours of fieldwork per week. Full time participation in an archaeological excavation or exploratory survey, preceded by three hours of seminar per week for onehalf of one semester, at the discretion of the instructor. Students will participate in all aspects of the operation and will be responsible for preparing a written report on some specific part of the work. Geographical areas and sites to be determined each year. Students taking the seminar only will receive two units only.

296. Topics in Egyptian Art and Archaeology. (2,4) Course may be repeated for credit as topic varies. Three hours of seminar per week. Two units to be graded on a satisfactory/unsatisfactory basis. Four units to be graded on a letter-graded basis. Prerequisites: 102A-102B or 106A-106B or consent of instructor. Changing topics involving ancient Egyptian art and archaeology. Focus may be regional, chronological, methodological, and/or thematic.

297. Topics in Ancient Ceramics of Egypt and the Levant. (2,4) Course may be repeated for credit as topic varies. Three hours of seminar per week. Two units to be graded on a satisfactory/unsatisfactory basis. Four units to be graded on a letter-graded basis. Prerequisites: 102AB, 124AB or the equivalent; Consent of instructor. Changing topics in the study of ancient ceramics, stressing the relationship between pottery on the one hand, and archaeological practice and research in Egypt and/or the Levant on the other hand. Emphasis is placed on the relationship between pottery and broader issues involving the history and culture of these regions. Where appropriate, extensive use is made of slides and "hands-on" experience with available ceramic collections (e.g., Hearst Museum collection.)

298. Seminar. (1-4) Course may be repeated for credit. Prerequisites: Consent of instructor. Special topics in Near Eastern Studies. Topics vary and are announced at the beginning of each semester.

299. Individual Research. (4-12) Course may be repeated for credit. Individual conferences. Prerequisites: Successful completion of Ph.D. qualifying exams, limited to students engaged in research for the doctoral dissertation.

301. Individual Studies for Master’s Students. (1-4) Course may be repeated for credit. Must be taken on a satisfactory/unsatisfactory basis. Individual study for the comprehensive or language requirements in consultation with the graduate adviser. Units may not be used to meet either unit or residence requirements for a master’s degree.

302. Individual Study for Doctoral Students. (1-8) Course may be repeated for credit. Three hours of lecture per week. Prerequisites: 20B or equivalent. Readings from the classical works of Islamic geographers and from contemporary scholarship. Development of historiography.

308. Islamic Religious and Philosophical Texts in Arabic. (3) Course may be repeated for credit as topic varies. Three hours of lecture per week. Prerequisites: Arabic 107 or equivalent. Readings from the classical works of Islamic philosophers and religious writers (Qur'an, Huran, Hadith, Sira, commentary) and in theological, mystical, and philosophical texts.

311A. Survey of Arabic Literature (in Arabic). (3) Course may be repeated for credit. Three hours of lecture per week. Prerequisites: 100A. This course is designed for students engaged in research for the doctoral comprehensive or language requirements in consultation with the graduate adviser. Units may not be used to meet either unit or residence requirements for a master’s degree.

H195. Senior Honors. (2-4) Must be taken on a passed/not passed basis. Prerequisites: Limited to senior honors candidates. Directed study centered upon preparation of an honors thesis.

198. Directed Group Study for Upper Division Students. (1-4) Course may be repeated for credit. Must be taken in a passed/not passed basis. Enrollment restrictions apply; see the Introduction to Courses and Curricula section of this catalog.

Graduate Courses

200. Arabic Grammatical Tradition. (3) Course may be repeated for credit as topic varies. Three hours of lecture per week. Prerequisites: 105 or the equivalent. Study of selected grammatical phenomena of Arabic based on readings from the classical Arabic grammarians, on the modern study of linguistics in the Arab world, and on the Western grammatical tradition.

202. History of Arabic. (3) Course may be repeated for credit when topics vary. Three hours of lecture per week. Prerequisites: 20B or its equivalent with consent of instructor. The history of Arabic from its Semitic antecedents through the formation of the modern dialects.

209A-209B. Readings in the Qur’an. (3,3) Course may be repeated for credit as texts vary. Three hours of lecture per week. Prerequisites: Three years of Arabic. Selected readings in Arabic from the Qur’an, traditional Islamic exegesis, and other secondary material.

212. Topics in Modern Arabic Literature: Poetry. (3) Course may be repeated for credit. Three hours of lecture per week. Prerequisites: 107 or equivalent. Intensive study of modern poetry in relation to the cultural tradition.

220. Seminar in Classical Arabic Literature. (3) Course may be repeated for credit as topic varies. Three hours of seminar per week. Prerequisites: 20B or its equivalent and consent of instructor. A close reading and careful literary analysis of significant authors and specific topics in Classical Arabic prose or poetry or both.

245. Seminar: Modernist Arabic Poetics. (3) Course may be repeated for credit as topic varies. Three hours of lecture per week. Prerequisites: Consent of instructor. This course examines the basic texts of Islamic civilization and function of literary theory in the making of modern Arabic literature. Questions of cultural influence, literary genres, forms, modes, and techniques of representation all central to the interests of this course.

298. Seminar. (1-4) Course may be repeated for credit. Prerequisites: Consent of instructor. Special topics in Arabic. Topics vary and are announced at the beginning of each semester.

394 / Near Eastern Studies
Professional Courses

301A-301B. Teaching Arabic. (3;3) One hour of lecture per week plus participation in demonstration classes and colloquia. Must be taken on a satisfactory/unsatisfactory basis. The methodology of teaching Arabic as a foreign language at the college level. Lectures may cover contrastive analysis of English and Arabic, classroom strategies, and the development of instructional materials. Required of all new graduate student instructors in Arabic.

Cuneiform

Upper Division Courses

100A-100B. Elementary Akkadian. (5;5) Four hours of lecture per week. Introduction to cuneiform script and grammar, reading of selected cuneiform texts. Sequence begins in fall. Offered alternate years.

101A-101B. Selected Readings in Akkadian. (3;3) Course may be repeated for credit with consent of instructor. Three hours of lecture per week. Prerequisites: 100A-100B. Reading of selected texts, including legal codes, letters, myths, and epics. Sequence begins in fall. Offered alternate years.

102A-102B. Elementary Sumerian. (4;4) Three hours of lecture per week. Introduction to Sumerian grammar and writing.

103A-103B. Selected Readings in Sumerian. (3;3) Course may be repeated for credit with consent of instructor. Three hours of lecture per week. Prerequisites: 102A-102B. Reading of texts selected for clarity of script, simplicity of vocabulary, and historical and cultural significance.

106B. Elementary Hittite. (4) Three hours of lecture per week. Prerequisites: Background in German and French recommended. Introduction to Cuneiform Hittite language and grammar with reading of selected historical and religious texts.

H195. Senior Honors. (2-4) Must be taken on a passed/not passed basis. Prerequisites: Limited to senior honors candidates. Directed study centered upon preparation of an honors thesis.

198. Directed Group Study for Upper Division Students. (1-4) Course may be repeated for credit. Must be taken on a passed/not passed basis. Enrollment is restricted by regulations shown in the General Catalog.

Graduate Courses

201A-201B. Later Stages of Egyptian. (3;3) Three hours of lecture per week. Prerequisites: 101A-101B and 102A-102B. Introduction to late Egyptian and Demotic.

202A-202B. Egyptian Texts. (3;3) Course may be repeated for credit. Three hours of lecture per week. Prerequisites: Concurrent or previous enrollment in 201A-201B or consent of instructor. Philological analysis of texts of a single genre and period.

Egyptian

Upper Division Courses

100A-100B. Elementary Egyptian. (5;5) Three hours of lecture and one hour of discussion per week. Introduction to Middle Egyptian grammar and texts.

101A-101B. Intermediate Egyptian. (3;3) Three hours of lecture per week. Prerequisites: 100A-100B. Readings in Middle Egyptian hieroglyphic and hieratic scripts.

102A-102B. Elementary Coptic. (4;4) Three hours of lecture per week. Prerequisites: German and Greek recommended.

A. Introduction to Sahidic dialect.
B. Readings in Sahidic, other dialects.

H195. Senior Honors. (2-4) Must be taken on a passed/not passed basis. Prerequisites: Limited to senior honors candidates. Directed study centered upon preparation of an honors thesis.

198. Directed Group Study for Upper Division Students. (1-4) Course may be repeated for credit. Must be taken on a passed/not passed basis. Enrollment is restricted by regulations shown in the General Catalog.

Graduate Courses

201A-201B. Advanced Biblical Hebrew Texts. (3;3) Course may be repeated for credit as texts vary. Three hours of lecture per week. Prerequisites: 102A-102B. Historical and literary study of Hebrew and Aramaic Judean texts (e.g., Talmud and Midrash).

203A-203B. Advanced Medieval Hebrew Texts. (3;3) Course may be repeated for credit. Three hours of lecture per week. Prerequisites: 103A-103B and 105A-105B. Literary analysis of biblicistic Hebrew texts, either prose or poetry, chiefly from the medieval period.

204A-204B. Advanced Modern Hebrew Literature and Culture. (3;3) Course may be repeated for credit as topics vary. Three hours of seminar per week. Prerequisites: Two semesters of 104A-104B or 105A, or equivalent. Critical approaches to the history and textual practices of modern Hebrew poetry and fiction. Alternating focus between period, genre, and author, seminar topics include stylistic developments in Hebrew poetry and fiction from the Enlightenment to the present, modernism, and modernity, the creation of the modern Hebrew novel, women writers and the Hebrew canon, and single-author samplers.

206. Ancient and Modern Hebrew Literary Texts. (3) Course may be repeated for credit. Three hours of lecture per week. Prerequisites: 100A-100B or consent of instructor. Focus on biblical texts seen from a literary point of view, attempts to establish connections with later Hebrew literature.

208. Seminar. (1-4) Course may be repeated for credit. Prerequisites: Consent of instructor. Special topics in Hebrew. Topics vary and are announced at the beginning of each semester.

Professional Courses

301A-301B. Teaching Hebrew in College. (3;3) One hour of lecture per week plus participation in demonstration classes and colloquia. Must be taken on a satisfactory/unsatisfactory basis. Prerequisites: Graduate Standing. The methodology of teaching Hebrew as a foreign language at the college level. Lectures on-
Persian and Iranian

Persian

Lower Division Courses

1A-1B. Elementary Modern Persian. (5,5) Five hours of lecture per week. In this elementary course, stu-
dents learn basic reading, writing, and conversation skills in Persian. Completion of 1A-1B is the prereq-
usite for 100A.

11A. Reading and Composition for Persian Speaking Students. (5) Five hours of recitation per week. Prereq-
uisites: Rudimentary knowledge of spoken Per-
sian and consent of instructor. Designed for students with rudimentary knowledge of the Persian language: students who have oral skills (speaking/comprehension, though limited), but lack writing and reading abilities, and grammatical and syntactic knowledge. Completion of 11A-11B will prepare the student to take Persian 100A, Intermediate Persian.

11B. Reading and Composition for Persian-Speaking Students. (5) Five hours of recitation per week. Prereq-
uisites: 11A or consent of instructor. Designed for students with rudimentary knowledge of the Persian language: students who have oral skills (speaking/comprehension, though limited), but lack writing and reading abilities, and grammatical and syntactic knowledge. Completion of 11A-11B will prepare students to take Persian 100A, Intermediate Persian.

Intermediate Persian. (3,3) Course may be repeated for credit with consent of instructor. Three hours of lecture per week. Prerequisites: 100A or consent of instructor. Required of all new Graduate Student In-
structors in Hebrew.

100A-100B. Intermediate Modern Persian. (5,5) Five hours of lecture per week. Prerequisites: 1A-1B or con-
sent of instructor. The student will further develop ma-
jor skills of the language: reading, writing, speaking, and listening comprehension.

101A-101B. Selected Readings in Persian Literature. (3,3) Course may be repeated for credit with consent of instructor. Three hours of lecture per week. Prereq-
uisites: 100A-100B or consent of instructor. Readings in both prose and poetry, drawn chiefly from classical Per-
sian literature, designed to increase reading skills and vocabulary and to provide a transition to the study of more challenging texts.

102A-102B. Readings in Classical Persian Prose. (3,3) Course may be repeated for credit. Three hours of lecture per week. Prerequisites: 101A or 101B or consent of instructor. Systematic study of representa-
tive selections from all periods of classical Persian lit-
iture, with attention to the historical and intellectual context.

103A-103B. Classical Persian Poetry. (3,3) Course may be repeated for credit. Three hours of lecture per week. Prerequisites: 101A or 101B or consent of instructor. Designed for students with rudimentary knowledge of the Persian language: students who have oral skills (speaking/comprehension, though limited), but lack writing and reading abilities, and grammatical and syntactic knowledge. Completion of 11A-11B will prepare students to take Persian 100A, Intermediate Persian.

Upper Division Courses

100A-100B. Intermediate Modern Persian. (5,5) Five hours of lecture per week. Prerequisites: 1A-1B or con-
sent of instructor. Designed for students with rudimentary knowledge of the Persian language: students who have oral skills (speaking/comprehension, though limited), but lack writing and reading abilities, and grammatical and syntactic knowledge. Completion of 11A-11B will prepare students to take Persian 100A, Intermediate Persian.

110A-110B. Middle Persian. (3,3) Course may be repeated for credit. Three hours of lecture per week. Prerequisites: Persian 100A-100B or consent of instructor. Lectures on the methodology of teaching Persian as a foreign lan-
guage at the college level. Lectures on constructive analysis of English and Persian, classroom strategies, and the development of instructional materials. Re-
quired of all new graduate student instructors in Per-
sian. (F,S,P) Pirmazar

Iranian

Upper Division Courses

110A-111B. Middle Persian. (3,3) Course may be repeated for credit. Three hours of lecture per week. Prerequisites: Persian 100A-100B or equivalent; back-
ground in German or French recommended, but not required; Manichean Middle Persian texts, with an in-
truction to Pahlavi.

Graduate Courses

210A-210B. Middle Persian. (3,3) Course may be repeated for credit as topic varies. Three hours of lecture per week. Prerequisites: 110A-110B, 111A-111B, or consent of instructor. Reading of texts in Avestan, western Middle Iranian, and Sogdian, taken from Zoroastrian, Manichean, and Buddhist texts.

Semitics

Upper Division Courses

100A-100B. Aramaic. (3,3) Course may be repeated for credit. Three hours of lecture per week. Prereq-
quisites: Hebrew 100A-100B. Biblical and Ancient Ara-
maic, including study of the Aramaic parts of Daniel and Ezra and inscriptions and papyri from Syria, Egypt, Mesopotamia, and the Persian Empire. Se-
quence begins fall.

198. Directed Group Study for Upper Division Stud-
ents. (1-4) Course may be repeated for credit. Must be taken on a passed/not passed basis. Instruc-
tion in areas not covered by regularly scheduled courses.

Graduate Courses

205A-205B. Uguritic. (3,3) Course may be repeated for credit. Three hours of lecture per week. Prereq-
quisites: 101A-101B or 100A-100B or equivalent. Ugur language and literature with stress on comparative morphology and lexicography. Sequence begins fall.

209A-209B. Northwest Semitic Epigraphy. (4,4) Course may be repeated for credit. Three hours of seminar per week. Prerequisites: Reading knowledge of Biblical Hebrew. This two course sequence will study the epigraphic remains of the Northwest Semitic languages. First semester will study inscriptions in He-
brew. Second semester topics will vary from year to year. Possible topics include: Canaanite inscriptions; El-
Amarna Akkadian; Elbaite. The inscriptions will be studied both from the perspective of the comparative history of the Northwest Semitic languages and also for their relevance in illuminating contemporaneous his-
tory and culture.

298. Seminar. (1-4) Course may be repeated for credit. Prerequisites: Consent of instructor. Special top-
ics in Semitics. Topics vary and are announced at the beginning of each semester.

Turkish

Lower Division Courses

1A-1B. Elementary Modern Turkish. (5,5) Five hours of lecture per week. Sequence begins fall.

Upper Division Courses

100A-100B. Intermediate Modern Turkish. (5,5) Five hours of lecture per week. Prerequisites: 1A-1B or equivalent. Sequence begins fall.

101A-101B. Readings in Modern Turkish. (3,3) Course may be repeated for credit. Three hours of lec-
ture per week. Prerequisites: 100A-100B or consent of instructor. Selected topics from modern Turkish liter-
ary works.

H195. Senior Honors. (2-4) Must be taken on a passed/not passed basis. Prerequisites: Limited to se-
nior honors candidates. Directed study centered upon preparation of an honors thesis.

198. Directed Group Study for Upper Division Stud-
ents. (1-4) Course may be repeated for credit. Must be taken on a passed/not passed basis. Instruc-
tion in areas not covered by regularly scheduled courses.

199. Supervised Independent Study and Research. (1-4) Course may be repeated for credit. Must be taken on a passed/not passed basis. Enrollment is re-
stricted by regulations in the General Catalog.

Graduate Courses

298. Seminar. (1-4) Course may be repeated for credit. Prerequisites: Consent of instructor. Special top-
ics in Turkish. Topics vary and are announced at the beginning of each semester.

Neuroscience

(Interdisciplinary Graduate Program)

Office: 132 Barker Hall, (510) 642-9515 neuroscience.berkeley.edu

Directors: John J. Ngai, Ph.D.

Professors

Martin S. Banks, Ph.D. University of Minnesota (Optometry)

Mark D’Esposito, M.D. State University of New York Health Science Center at Syracuse, College of Medicine

Yang H. Ph.D. Columbia University (Molecular and Cell Biology)

John Flannery, Ph.D. University of California, Santa Barbara (Molecular and Cell Biology)

Ralph D. Freeman, O.D. Ohio State University, Ph.D. University of California, Berkeley (Optometry)

Gian Garriga, Ph.D. St. Louis University (Molecular and Cell Biology)

Harold Lecar, Ph.D. Columbia University (Molecular and Cell Biology)

Stephen E. Glickman, Ph.D. McGill University (Psychology)

Ehud Isacoff, Ph.D. McGill University (Molecular and Cell Biology)

Chadwick J. Jenkins, Ph.D. University of Oregon (Psychology)

Dennis M. Levi, Ph.D. University of Houston (Optometry)

John Ngai, Ph.D. California Institute of Technology (Molecular and Cell Biology)
Gunther S. Stent

Computer Sciences; Chemical Engineering; Environmental Science, Policy, and Management

The PhD program in Neuroscience at the University of California, Berkeley, is a graduate program in neuroscience that stresses the interdisciplinary nature of neuroscience research. The program includes, in three broad research areas: Cellular, Molecular, and Developmental Neuroscience; Systems and Computational Neuroscience; and Cognition, Brain, and Behavior. Individual faculty may be involved in more than one research area.

Applicants to the program should have a bachelor's degree in science from a four-year college. Applicants are required to submit GRE General Test scores, and applicants must be admitted to a department. GRE Subject Test scores in biochemistry and cell biology, chemistry, psychology, biology, computer science, or physics are required.

During the first two years in the program, each student is required to take a minimum of three 3- or 4-unit graduate (200-level) courses chosen from a wide range of specialized graduate courses. Graduate advisers help students tailor their coursework to their individual needs and interests. To ensure breadth in didactic coursework, however, students are required to choose courses that are distributed between at least two subdisciplines of neuroscience (i.e., cell, molecular, and developmental neuroscience; systems and computational neuroscience; and cognition, brain, and behavior). Note that students, with approval from the graduate adviser, may take courses in other specialized areas important to their research and their research foundation, such as biochemistry, genetics, statistics, physics, bioengineering, etc. Independent research in different laboratories starts at the beginning of the first year.

Students are also required to serve as graduate student instructors for at least two semesters during their first three years of study. Graduate students advance to candidacy for the PhD by passing a qualifying examination at the end of the second year in the program. Students are expected to finish their degree within 5 to 6 years.

For detailed information on the graduate program, see neuroscience.berkeley.edu/grad.php, e-mail neurosci@berkeley.edu, or mail your inquiries to Graduate Student Affairs, Neuroscience Institute, University of California, Berkeley, 132 Barker Hall #3190, Berkeley, CA 94720-3190.

The Neuroscience Institute has no designated lecture courses, but various affiliated departments offer a wide range of options. A selection is listed below. (For more details, see individual course descriptions.)

General/Survey Courses: Ethics in Scientific Research (MCB 293C).

Cellular, Molecular, and Developmental NeuroScience Courses: Advanced Cellular and Molecular Neurobiology (MCB 261), Advanced Cell Biology (MCB 230), Genetics (MCB 240), Biochemistry and Molecular Biology (MCB 200), Advanced Neurobiology (MCB 263), and Advanced Developmental Biology (MCB 231).

Systems and Computational NeuroScience Courses: Advanced Topics in Systems Neuroscience (MCB 262), Functional Neuroanatomy and Laboratory (IB 245 and IB 245L), Sensory Systems (Psych 210C), Neuronal Mechanisms of Learning and Memory (Psych 290Z), and Neuronal Computation (VS 298).

Cognition, Brain, and Behavior Neuroscience Courses: Cognitive Neuroscience (210A), Hor- mones and Behavior (Psych 211), Functions and Methods (Psych 214), and Proseminar: Biological, Cognitive, and Language Development (Psych 240A).

Recommended Statistical Methods Courses: Data Analysis (Psych 205), Linear Systems Theory (EECS 221A), Random Processes and Systems (EECS 226A), Information Theory and Coding (EECS 229), Analysis of Time Series (Stat 248), and Statistical Learning Theory (Stat 241A).

Other selected seminar courses include Graduate Seminar on Specialized Neuroscience Topics (MCB 290 series), Special Topics in Biological and Computational Psychology (Psychology 290 series), and Special Seminars in Vision Science (Vision Science 298 series).

The Helen Wills Neuroscience Institute also sponsors an annual campus-wide neuroscience retreat, weekly seminar series, and a graduate student Neuroscience Journal Club.

Nuclear Engineering

(College of Engineering)

Department Office: 4153 Etcheberry Hall, (510) 642-5010
Web: nuc.berkeley.edu
Chair: Jasmina L. Vujic, Ph.D.

Professors

*Paul L. Chamber, Ph.D. University of California, Berkeley. Numerical and analytical methods
Thomas J. Downar, Ph.D. Massachusetts Institute of Technology. Reactor physics, numerical methods
Daniel M. Kamm, Ph.D. Harvard University. Renewable energy systems, health and environmental impacts of energy generation and use
Edward C. Morse, Ph.D. University of Illinois. Applied plasma physics
Pier F. Peterson, Ph.D. University of California, Berkeley. Thermal hydraulics and nuclear materials management
*Stanley G. Prusin, Ph.D. University of Michigan. Nuclear/radio chemistry and its applications
Jasmina L. Vujic (Chair), Ph.D. University of Michigan. Numerical methods in particle transport theory and reactor physics
Virgil E. Schrock, M.S., E.M. (Emeritus)

Associate Professors

Joo Young Ahn, PhD. University of Berkeley. Nuclear Engineering / 397
Brian D. Wirth, Ph.D. University of California, Santa Barbara. Effects of radiation on metals

Professors

Dan Gabriel Cacuci, Ph.D. (Emeritus)
Ehud Greenspan, Ph.D. (In Residence)
Bruce Hasegawa, Ph.D. (Emeritus)
Ka-Ngo Leung, Ph.D. (In Residence)
Eric B. Norman, Ph.D. (In Residence)

Associated Professor

John Verboncoeur, Ph.D. (In Residence)

Department Overview

Nuclear engineering is concerned with the applications of nuclear reactions and radiation to biomedical devices, energy systems, and environmental concerns and issues. The scope of the field includes the design, analysis, and operation of nuclear reactors and their nuclear fuel cycles, devices for the detection, prevention, and treatment of disease, and systems for the treatment and disposal of high-level radioactive waste. The principles of nuclear engineering are applicable both to nuclear fusion reactors and to the development of nuclear fusion as an energy source. The nuclear engineering courses deal with the physical principles of nuclear reactions, the interaction of nuclear radiation with matter, the behavior of neutrons in reactor media, the thermal and hydrodynamic principles of heat extraction, the processes of nuclear fission in practical reactors, and the development and use of neutronic and thermal-hydraulic processes in nuclear fuel cycles, reactor design, and thermonuclear fusion. These subjects are taught in courses at the undergraduate and graduate levels. Other courses include radiological protection, environmental effects, nuclear safety, risk analysis, high-level radioactive waste disposal, medical imaging, biophysics, and biomedical devices.
Curriculum for the Bachelor’s Degree

General Nuclear Engineering Program: A total of 120 units is required, including:

- **Lower Division.** Required: Mathematics 1A-1B, 53, 54; Chemistry 1A; Physics 7A-7B-7C; Engineering 77, 45; Electrical Engineering and Computer Science 100, Electronic Techniques for Engineering (may also be satisfied by EECS 40); electives.

- **Upper Division.** Required: Engineering 115, 117; Nuclear Engineering 101, 104A-104B, 150, 150A, 150B, 170A, 170B, 170C, 170D; Engineering 104A; Chemistry 137A; Physics 137A, 137B; Chemistry 137A; Molecular and Cell Biology 120, 130; electives.

**Note:** Electives must include (a) units to meet the humanities and social studies requirement; (b) at least 15 units of upper division NE courses; and (c) one course with ethics content.

Bionuclear Engineering Program: A total of 120 units is required, including:

- **Lower Division.** Required: Mathematics 1A-1B, 53, 54; Chemistry 1A; Chemistry 3A; Physics 7A-7B-7C; Engineering 45; Biology 1A; Electrical Engineering and Computer Sciences 100, Electronic Techniques for Engineering (also may be satisfied by EECS 40); electives.

- **Upper Division.** Required: Electrical Engineering and Computer Sciences 145B; Engineering 115 or Chemical Engineering 141; Engineering 117; Nuclear Engineering 101, 104A, 162, 170B; Physics 157A; advanced biology core (Molecular and Cell Biology 120, 130); electives.

**Note:** Electives must include (a) units to meet the humanities and social studies requirement; (b) at least 9 units of upper division NE courses; and (c) one course with ethics content.

Humanities and Social Studies Requirement. Humanities/Social Studies Electives include six courses of at least 3 units each in humanities and social studies selected from an approved list of courses. Two of these must fulfill the College of Engineering Reading and Composition requirement. Refer to the current catalog of Nuclear Engineering pdf for details or go to 308 McLaughlin Hall for a handbook.

For details on double major degree requirements, please consult the Announcement of the College of Engineering.

**Note:** In addition to the courses listed under the Department of Nuclear Engineering, the department offers the following course found in the Engineering section of this catalog: 115, Engineering Thermodynamics.

Graduate Study

Admission to the graduate program in nuclear engineering is available to qualified individuals who have obtained a bachelor’s degree from a recognized institution in one of the fields of engineering or the physical sciences. For all programs, required preparation in undergraduate coursework includes (a) a major in physics, mathematics, and advanced analysis, nuclear reactions, and thermodynamics. Admission is granted on the basis of undergraduate and graduate records (if any), statement of purpose, record of work experience and professional activities, letters of recommendation, and the GRE and TOEFL (if applicable). The graduate program is divisible into 11 areas, each representing an important aspect of nuclear technologies, and its applications; nuclear reactions and radiation; nuclear materials and chemistry; energy and the environment; fission and fusion reactor analysis; fusion science and technology; nuclear medicine and radiation therapy; nuclear waste management; and radiation protection and control, nuclear energy production and utilization, nuclear fuel cycle, reactor safety, controlled fusion, nuclear waste, medical, and other applications of radiation, nuclear proliferation and arms control, and nuclear forensics and intelligence (SP) Staff

- Improved Nuclear Simulations in Radiation Transport. (3) Three hours of lecture per week. Prerequisites: Mathematics 53 and 54. Computational methods and algorithms used in nuclear radiation transport. (F) Ahn, Vujic

- Introduction to Nuclear Reactor Theory. (3) Three hours of lecture per week. Prerequisites: 101; Mathematics 53 and 54. Nuclear fission, and chain reacting systems in thermal and fast nuclear reactors. Diffusion and slowing down of neutrons. Criticality calculations. Nuclear reactor dynamics and reactivity feedback. Production of radioactive nuclides in nuclear reactors. (SP) Greenspan, Vujic

- Introduction to Numerical Simulations in Radiation Transport. (3) Three hours of lecture per week. Prerequisites: 101, Mathematics 53 and 54. Computational methods and algorithms used in nuclear radiation transport. (F) Ahn, Vujic

- Nuclear Power Engineering. (4) Three hours of lecture and one hour of discussion/demonstration per week. Prerequisites: Course(s) in fluid mechanics and heat transfer; junior-level course in thermodynamics. Energy conversion systems: fission and fusion power systems; design of fission reactors; thermal and structural analysis of reactor core and plant components; thermodynamic analysis of accidents in nuclear power plants; safety evaluation and engineered safety systems. (F) Peterson

- Radiation Biophysics and Dosimetry. (3) Three hours of lecture per week. Prerequisites: Upper division standing or consent of instructor. Interaction of radiation with matter; physical, chemical, and biological effects of radiation on human biological systems; radiation protection and control; theory of radiation; units and measurements; internal and external radiation fields and dosimetry; radiation exposure regulations; sources of radiation and radioactivity; basic shielding concepts; elements of radiation protection and control; theory of radiation and models for cell survival, radiation sensitivity, carcinogenesis, and dose calculation. (SP) Vujic

- Nuclear Reactor Safety. (3) Three hours of lecture per week. Prerequisites: 150, 161, or consent of instructor. Principles and methods used in the safety evaluation of nuclear power plants. Safety philosophy, design criteria, and regulations. Deterministic and probabilistic models, reliability analysis, nuclear and thermal-hydraulic transients, radiological consequences, and risk assessment. Design-basis and severe accident analysis, role of engineered safety systems, siting, and licensing. (F) Kastenberg

- Nuclear Design: Design in Nuclear Power Technology and Instrumentation. (3) Three hours of lecture per week. Prerequisites: Senior standing or consent of instructor. Formerly 170. Design of various fission and fusion power systems and other physically based applications. Each semester a topic will be chosen by the class as a whole. In addition to technology, emphasis should be placed on the relevance to economics, the environment, and risk assessment. (SP) Ahn, Vujic

- Nuclear Design: Design in Nuclear Engineering. (3) Three hours of lecture per week. Prerequisites: 101, or consent of instructor. Formerly 167. A systems approach to the development of procedures for nuclear medicine and radiation therapy. Each semester a
specific procedure will be studied and will entail the development of the biological and physiological basis for a procedure, the chemical and biochemical characterisation of drugs, dosimetric considerations, and limitations, the production and distribution of radionuclides and/or radiation fields to be applied, and the characteristics of the instrumentation to be used. (SP) Ahn, Vujic

175. Methods of Risk Analysis. (3) Four hours of lecture per week. Prerequisites: Upper division standing. Methodological approaches for the quantification of technological risk and risk based decision making. Probabilistic safety assessment, human health risks, environ- mental and ecological risk analysis. (F) Kastenberg

180. Introduction to Controlled Fusion. (4) Three hours of lecture and 4 hours of discussion/demonstration per week. Prerequisites: Physics 7C. Introduction to energy production by controlled thermonuclear reactions. Nuclear fusion reactions, energy balances for fusion systems, theory of plasma physics; neutral beam injection; RF heating methods; vacuum systems; tritium handling. (F) Morse

198. Group Study for Advanced Undergraduates. (1-4) Course may be repeated for credit. Various. Must be taken on a pass/no pass basis. Prerequisites: Upper division standing. Groups of selected topics. (F,SP)

199. Supervised Independent Study. (1-4) Course may be repeated for credit for a maximum of 4 units per semester. Individual conferences. Must be taken on a pass/no pass basis. Prerequisites: Consent of instructor and major advisor. Supervised independent study. Enrollment restrictions apply; see the Introduction to Courses and Curricula section of this catalog. (F,SP)

Graduate Courses

201. Nuclear Reactions and Interactions of Radiation with Matter. (4) Four hours of lecture per week. Prerequisites: 101; Interaction of gamma rays, neutrons, and charged particles with matter; nuclear structure and radioactive decay; cross sections and energetics of nuclear reactions; nuclear fission and the fission products; fission and fusion reactions as energy sources. Offered every even-numbered years. (SP)

220. Irradiation Effects in Nuclear Materials. (3) Three hours of lecture per week. Prerequisites: 120 or consent of instructor. Physical aspects and computer simulation of radiation damage in metals. Void swelling and irradiation creep. Mechanical analysis of structures under neutron and gamma irradiation, blistering, and heat and phase behavior in fusion reactor materials. Offered odd-numbered years. (SP) Olander, Wirth

221. Corrosion in Nuclear Power Systems. (3) Three hours of lecture per week. Prerequisites: 120, Materials Science and Mineral Engineering 112 recommended. Strain-induced corrosion, hydrogen properties and fabrication of Zircaloy; aqueous corrosion of reactor components; structural integrity of reactor components under combined mechanical loading, neutron irradiation, and chemical environment. Offered even-numbered years. (SP) Olander

224. Safety Assessment for Geological Disposal of Radioactive Wastes. (3) Three hours of lecture per week. Prerequisites: 124 or upper division course in different subject matter. Background concerning groundwater hydrology, mathematical modeling of mass transport in heterogeneous media, source term for field model; near-field chemical environment, radionuclide models, modeling of radionuclide transport in the near field, effect of temperature on repository performance, effect of water flow, effect of geochemical conditions, effect of engineered barrier itation; overall performance assessment, performance analyses, methodology associated with assessment, regulation and standards. (SP) Ahn

225. The Nuclear Fuel Cycle. (3) Three hours of lecture per week. Prerequisites: Graduate standing or consent of instructor; 124 and 150 are recommended. This course is intended for graduate students interested in acquiring a foundation in nuclear fuel cycle with topics ranging from nuclear-fuel reprocessing to waste treatment and final disposal. The emphasis is on the relationship between nuclear-power utilization and its environmental impacts. The goal is for graduate engineering students to gain sufficient understanding in how nuclear-power utilization affects the environment so that they are better prepared to design an advanced system that would result in minimized environmental impact. The lectures will consist of two parts. The first half is focused on individual processes in a fuel cycle, such as nuclear fuel reprocessing, waste solidification, repository performance, and nuclear transmutation in a nuclear reactor. In the second half, these individual models are integrated, which enables students to evaluate environmental impact of a fuel cycle. Offered alternate spring semesters. (SP) Ahn

250. Nuclear Reactor Theory. (4) Four hours of lecture per week. Prerequisites: 101, 150; Engineering 117 recommended. Fission characteristics; neutron chain reaction growth; and diffusion and reactor kinetics; multigroup methods, fast and thermal spectrum calculations, inhomogeneous reactor design, effects of poisons and fuel depletion. Offered odd-numbered years. (F) Greenspan

255. Numerical Simulation in Radiation Transport. (3) Three hours of lecture per week. Prerequisites: 140, 150. Computational methods used to analyze nuclear reactor systems described by various differential, integral, and integro-differential equations. Numerical methods for solving these equations for finite elements, discrete ordinates, and Monte Carlo. Examples from neutron and photon transport, heat transfer, and thermal hydraulics. An overview of optimization techniques for solving the resulting systems of equations on vector and parallel computer systems. (F) Vujic

260. Thermal Aspects of Nuclear Reactors. (4) Four hours of lecture per week. Prerequisites: Mechanical Engineering 106 and 109 or Chemical Engineering 150B. Fluid dynamics and heat transfer; thermal and hydraulic analysis of nuclear reactors; two-phase flow and boiling; compressible flow; stress analysis; energy conversion methods. Offered even-numbered years. (F) Peterson

265. Design Analysis of Nuclear Reactors. (3) Three hours of lecture per week. Prerequisites: 150 and 161. Principles and techniques of economic analysis to determine capital and operating costs; fuel management and fuel cycle optimization; thermal limits on reactor performance, thermal converters, and fast breeders; control of nuclear reactors; safety and licensing; release of radioactivity from reactors and fuel processing plants. Offered even-numbered years. (F) Greenspan


275. Principles and Methods of Risk Analysis. (4) Four hours of lecture per week. Prerequisites: Consent of instructor. Civil Engineering 193 and Industrial Engineering 186 recommended. Principles and method- ological approaches for the quantification of technological risk assessment making. Offered odd-numbered years. (F) Kastenberg

280. Fusion Reactor Engineering. (3) Three hours of lecture per week. Prerequisites: 120 and 180. Engi- neering and design of fusion systems. Introduction to controlled thermonuclear fusion as an energy econ- omically attractive power source. From fusion physics, to technology, to energy involved. Case studies of fusion reactor design. Engineering principles of support technology for fusion systems. Offered even-numbered years. (SP) Morse


C228. Charged Particle Sources and Beam Technology. (3) Three hours of lecture per week. Prereq- uisites: Graduate standing or consent of instructor. Formerly 290A. Topics in this course will include the latest technology of various types of ion and electron sources, extraction and formation of charge particles beams, computer simulation of beam propagation, diag- nostics of ion sources and beams, and the applications of beams in fusion, synchrotron light source, neutron generation, microelectronics, lithography, and medical therapy. This is an introductory technol- ogy and engineering course that will be of interest to graduate students in physics, electrical engineering, and nuclear engineering. Also listed as Engineering C282. (F) Leung, Steier

C228L. Charged Particle Beam Instrumentation Laboratory for graduate students. (1-2) Offered even-num- bered years. Prerequisites: Graduate standing or consent of instructor. Must be taken concurrently with C228 or En- gineering C282. Option laboratory designed to ac- company Nuclear Engineering C228 and Engineering C282. Timing and electron and ion beam formation will be demonstrated experimentally. Laboratory sessions will be held at Lawrence Berkeley National Laboratory. Also listed as Engineering C228L. (F) (SP) Leung, Steier

C229B. Subsurface Nuclear Technology. (3) Three hours of lecture per week. Prerequisites: Upper division standing and graduate standing. This course will cover the funda- ments of subsurface nuclear technology and its applications to 1) infer the porosity, the density, elemental composition, and fluid content of subsurface media; 2) identify fluid movement in reservoirs; 3) determine fluid characteristics in complex fluid regimes; and 4) perform borehole diagnostics, using neutron and photon measurement and simulation techniques. Applica- tion of computational methods will also be covered. (F,SP) Badrzzaman, Vujic

290E. Uncertainty Analysis for Geologic Disposal. (2) Two hours of lecture per week. This course is in- tended for graduate students interested in acquiring a foundation in uncertainties associated with safety as- sessment for geologic disposal of high-level radioactive wastes and spent nuclear fuels. The safety assessment for the geologic disposal system for high-level radio- active wastes needs to cover a time period of 10,000 years or longer, and to take into account het- erogeneities observed in geologic formations. Under- standing the nature of uncertainties in the assessment results is a key to making right decisions in radioactive waste management. The goal is for graduate engi- neering students to gain sufficient understanding of how the uncertainties can be quantitatively evaluated. Lectures will consist of two parts. The first half includes an overview of uncertainties observed in the safety as- sessment for geologic disposal of nuclear waste and spent fuel, and a discussion of computational methods for radioactive mass transfer and transport, and sensi- tivity and uncertainties analyses. In the second half, applications of sensitivity and uncertainty analyses for repository performance assessment models are dis- cussed. Implications and interpretations for results of sensitivity and uncertainty analyses are discussed. (F) Ahn

C290F. Topics in Fluid Mechanics. (1,2) Course may be repeated for credit. One hour of seminar per week. Must be taken on a satisfactory/unsatisfactory basis. Prerequisites: Consent of instructor. Special topics which will be announced at the beginning of each semester that the course is offered. Topics may include transport and mixing, geophysical fluid dy- namics, bi-fluid dynamics, magnetohydrodynamics, free surface flows, non Newtonian fluid dynamics, among other possibilities. Also listed as Environ Sci, Policy, and Management C291, Physics C290I, Mathematics C290A, Civil Engineering C290K, Mechanical Engi- neering C298A, and Bioengineering C290C. (F,SP) Staff
295. Nuclear Engineering Colloquium. One and one-half hours of lecture per week. Must be taken on a satisfactory/unsatisfactory basis. Presentations on current topics of interest in nuclear technology by experts from government, industry and universities. Open to the campus community. (F,SP) Peterson

298. Group Research Seminars. (1) Course may be repeated for credit. One and one-half hours of seminar per week. Must be taken on a satisfactory/unsatisfactory basis. Seminars in current research topics in nuclear engineering: Section 1—Fusion; Section 2—Nuclear Waste Management; Section 3—Nuclear Thermal Hydraulics; Section 4—Nuclear Chemistry; Section 6—Nuclear Toxicology; Section 7—Fusion reaction design; Section 8—Nuclear Instrumentation. (F,SP) Staff

299. Individual Research. (1-12) Course may be repeated for credit. Must be taken on a satisfactory/unsatisfactory basis. Prerequisites: Graduate standing. Investigation of advanced nuclear engineering problems. (F,SP) Staff

602. Individual Study for Doctoral Students. (1-8) Course may be repeated for credit. Course does not satisfy unit or residence requirements for doctoral degree. Must be taken on a satisfactory/unsatisfactory basis. Prerequisites: For candidates for doctoral degree. Individual study in consultation with the major field advisor, intended to provide an opportunity for qualified students to prepare themselves for the various examinations required of candidates for the Ph.D. (F,SP) Staff

Professional Courses

301. Teaching Techniques in Nuclear Engineering. (1-3) Course may be repeated for credit. Must be taken on a satisfactory/unsatisfactory basis. Prerequisites: Graduate standing or ASE status. This course is designed to acquaint new teaching assistants with the nature of graduate student instruction in courses in the Department of Nuclear Engineering. Discussion, practice, and review of issues relevant to the teaching of nuclear engineering. Effective teaching methods will be introduced by experienced GSIs and faculty. (F,SP) Staff

Nutritional Science and Toxicology
(College of Natural Resources)

Department Office: 119 Morgan Hall, (510) 642-6490 nutrition.berkeley.edu

Chair: Joseph L. Napoli, Ph.D.

Professors

Associate Professors

Adjunct Professors

Lecturers
Katie M. Clark, M.P.H., R.D. Mark Hudes, Ph.D. Mary Mead, M.Ed., R.D.

Director, Didactic Program in Dietsetics
Mary Mead, M.Ed., R.D.

Department Overview

The research and curriculum of the Department of Nutritional Science and Toxicology addresses the experimental biology of nutrients, phytochemicals, and diet-toxicants, using the techniques of modern biology and chemical analyses to understand the relationship among diet, the metabolic genome, and optimal health/chronic disease. Our goals are to determine the molecular mechanisms of dietary affects on health, and the contribution of individual genotype to dietary responses and disease risk. This approach of modern biology will provide detailed insight into the impact of diet on human health and chronic disease risk. We seek to translate lab and model systems data to human physiology, and to provide outreach through cooperative extension.

Undergraduate Programs

The Department of Nutritional Science and Toxicology offers two undergraduate majors, nutritional science and molecular toxicology, leading to the B.S. degree. Courses that fulfill the lower division prerequisites for major study include Biology 1A; Chemistry 1A, 3A/3AL-3B/LBL; English 1A-1B; equivalent; Mathematics 16A; Molecular and Cell Biology 32, 32L; Nutritional Science 10; Physics 8A; and Statistics 2.

Nutritional Science Major

The nutritional science major combines a strong foundation in the biological and chemical sciences with a choice of one of three areas of specialization: Physiology and Metabolism focuses on the biochemical and physiological study of nutrient use as well as the study of food properties and processing of food materials. Dietsetics prepares students for careers as registered dietitians (RDs). RDs translate the science of nutrition into practical applications for individuals and groups in clinical, food service, or community settings. Graduates of this program must complete a dietetic internship and pass a national examination to become an RD.

Molecular Toxicology Major

The molecular toxicology major combines a strong foundation in the biological and chemical sciences with a focus on the hazardous and beneficial effects of natural and synthetic agents. From industrially produced environmental contaminants and designer drugs to naturally occurring herbs and food products, this field of study applies molecular and computational methods to give students a better understanding of how these agents interact with living organisms and what should be done to ensure human health and safety.

Minors

Students who have pursued basic coursework in biological sciences under other majors may be eligible for one of the two undergraduate minors offered by the Department: a faculty member in a small-seminar setting. Freshman seminars are offered in all campus departments, and topics vary from department to department and semester to semester. (F,SP) Staff

Graduate Programs

The department administers two Ph.D. graduate programs in Molecular and Biochemical Nutrition and Molecular Toxicology. The Biochemical Nutrition program provides interdisciplinary training in the theory and techniques of molecular and biochemical metabolic studies of nutrients and phytochemicals in humans, and in mammals that serve as models for humans. Molecular Toxicology focuses on the adverse effects of chemicals on living organisms and how these effects are modulated by genetic, physiologic, and environmental factors.

For more information, please consult the catalog entry for each program.

Honors Program

Students who are interested in the honors program in nutritional science or molecular toxicology should apply no later than the beginning of their senior year. A grade-point average of 3.2 or higher is required both overall and in the major coursework. Students enroll for a minimum of two semesters in NS H196, Honors Research in Nutritional Science and Toxicology, for a total of at least 8 semester units. Attendance in a graduate seminar is highly recommended. In order to graduate with honors, students must write a superior thesis based on research to be reviewed by a committee of three faculty members.

For further information, please contact the student affairs officer, 117 Morgan Hall, (510) 642-2879.

Lower Division Courses

10. Introduction to Human Nutrition. (3) Students will receive no credit for 10 after taking 103 or 106. Two hours of lecture and one hour of discussion per week. Formerly Nutritional Sciences 10. This course provides an overview of digestion and metabolism of nutrients. Foods are discussed as a source of nutrients, and the evidence is presented for the effects of nutrition on health. The emphasis of the course is on issues of current interest and on worldwide problems of food and nutrition. Students are required to record their own diet, calculate its composition, and evaluate its nutrient content in light of their particular needs. (F,SP) Staff

11. Introduction to Toxicology. (2) Hours of lecture per week. Prerequisites: Open to students pursuing science and non science majors. Discussion of practical implications for the evaluation of natural and man-made substances present in the environment, the workplace, food, drink, and drugs. The bases for species selectivity, individual variations in sensitivity and resistance, and the combined effects of toxic agents will be addressed. Issues related to the impact of toxic agents in modern society will be emphasized. (SP) Bjeldanes, Casida, Smith

24. Freshman Seminar. (1) Course may be repeated for credit as topic varies. One hour of seminar per week. Sections 1-2 to be graded on a letter grade basis. Formerly Nutritional Sciences 24. The Freshman Seminar Program has been designed to provide new students with the opportunity to explore an intellectual topic in the company of a faculty member in a small-seminar setting. Freshman seminars are offered in all campus departments, and topics vary from department to department and semester to semester. (F,SP) Staff
Nutritional Science and Toxicology / 401

110. Toxicology. (3) Three hours of lecture per week. Prerequisites: 110 may be taken concurrently. Molecular and Cell Biology 102 or 100. Formerly Nutritional Sciences 110. A comprehensive survey of the principles of modern toxicology and their applications in evaluating the safety of natural and man-made toxins. Mechanisms of metabolic activation, detoxification, and selective toxicity are emphasized. (F) Bjeldanes

C112. Introduction to Pharmacology and Toxicology. (3) Three hours of lecture per week. Prerequisites: Organic chemistry; upper division biological science. Principles of drug action and toxicology. Brief survey of major groups of chemicals used in therapy. Also listed as Public Health C172. (SP) Wei

113. Food Microbiology. (2) Two hours of lecture per week. Prerequisite: one week each in elementary biology and chemistry. Formerly Nutritional Sciences 113. Characteristics and actions of microorganisms involved in food and waterborne illness, food spoilage, and food fermentations. Selected aspects of biotechnology. The statistics of quality control. (SP) Chang

C114. Pesticide Chemistry and Toxicology. (3) Three hours of lecture per week. Prerequisites: Introductory courses in organic chemistry and biology, or consent of instructor. Major classes of pesticides and related compounds, their mode of action, resistance mechanisms, and methods of evaluating their safety and activity. Also listed as Environ Sci, Policy, and Management C114. (SP) Smith

C119. Advanced Toxicology. (3,4) Three to four hours of lecture per week. The application of toxicology to answer questions about safety and risk. Using a case-study approach, participants will learn how to interpret toxicological data and apply their knowledge to evaluating the toxic potential of everyday toxicants. The course will focus on our understanding of the important tissue and cellular components involved in chemical exposure from entry to effect to exit. Topics include metabolism and mechanisms of action for toxic chemicals, including drugs and environmental contaminants. Discussion of current topics of controversy in the field of toxicology. Also listed as Public Health C170B. (SP) M. Smith

120. Molecular Toxicology. (3) Three hours of lecture per week. Prerequisites: 113, 110, C119 or consent of instructor. Formerly Nutritional Sciences 120. Molecular toxicology attempts to understand the mechanisms by which hazardous compounds cause their toxic effects. The course will focus on our understanding of the important tissue and cellular components involved in chemical exposure from entry to effect to exit. Topics include metabolism and mechanisms of action for toxic chemicals, including drugs and environmental contaminants. Discussion of current topics of controversy in the field of toxicology. Also listed as Public Health C170B. (SP) M. Smith

121. Computational Toxicology. (4) Three hours of lecture/demonstration and two hours of computer laboratory per week. Prerequisites: Molecular and Cell Biology 102 or consent of instructor. Formerly Nutritional Sciences 121. Introducing the use of bioinformatics tools useful in linking the molecular structure of chemicals to the toxicity they induce in biological systems. Discussions on the highly interactive process of collecting, organizing, and assimilating chemistry and toxicology information—and the use of computer programs to visualize, browse, and interpret this information to discover chemical structure-toxicity correlations. The importance of these concepts in drug discovery and development and food safety will be emphasized. (SP) Vulp

135. Food Systems Organization and Management. (3) Three hours of lecture per week. Prerequisites: consent of instructor. Formerly Nutritional Sciences 135. Principles of organization and management applied to institutional food service systems: production and delivery systems, management of different components of a food service operation, quality assurance, equipment, layout, marketing, personnel management, fiscal management. Laboratory experiences, projects and field work in institutional situations. (SP) Staff

150. Mechanisms of Metabolic Regulation. (3) Three hours of lecture per week. Prerequisites: 113, or Molecular and Cell Biology 102 or equivalent. Formerly Nutritional Sciences 150. Principles of metabolic regulation in higher animals. Integration of metabolic pathways and fluxes emphasizing experimental data and understanding of mechanisms of nutrient affects. Advances in methods for studying metabolism, ranging from iso- to global genomic techniques. This course provides the foundation for pursuing research in nutrition biochemistry/molecular biology, and for understanding nutrient and endocrine related diseases such as diabetes, chronic diseases such as obesity, and cardiovascual disease. (F) Napoli, Sul

C159. Human Diet. (4) Three hours of lecture and one hour of discussion per week. Since we eat every day, wouldn’t it be useful to learn more about human dietary practices? A broad overview of the complex interrelationships between humans and their foods. Topics include the human dietary niche, biological variation related to diet, diet and disease, domestication of staple crops, food processing techniques and development of new foods, modern diets, food taboos, human attitudes toward foods, and dietary politics. Also listed as Environ Sci, Policy, and Management C159. (SP) Milton

160. Human Nutrition: Normal Physiology and Pathophysiology of Disease. (3) Three hours of lecture and one hour of discussion per week. Prerequisites: 103, or Molecular and Cell Biology 102 or equivalent. Formerly Nutritional Sciences 160. The normal regulation of human nutrient metabolism and the pathophysiological basis of common nutritional diseases will be discussed. Focus will be on metabolic integration in the whole organism. Conditions covered will include obesity, starvation/anorexia nervosa, diabetes, cardiovascular disease, osteoporosis, anemia, addictive behaviors, and nutrition during pregnancy, infancy, old age, and other states. (SP) Hellestein

161A. Medical Nutrition Therapy. (4) Four hours of lecture per week. Prerequisites: 103 and 160. Formerly Nutritional Sciences 161A. This lecture course addresses nutrition as a component of disease treatment. As we explore medical nutrition therapy, we will also study pathophysiology, diagnosis, and medical pharmacological treatments. Methods of nutrition assessment and nutrient delivery in a medical setting will be covered. (SP) Mead

161B. Applications in Medical Nutrition Therapy. (2) Four hours of lecture per week. Prerequisites: 103 and 160. 161A should be taken concurrently. Formerly Nutritional Sciences 161L. Theory and concepts from 161A are applied through a variety of methods including completion of disease specific case studies, nutrition assessment, care plans, and medical record documentation. Students design and calculate therapeutic diets, and enter supplements and parenteral nutrition support. Projects and supermarket surveys are completed. (SP) Mead

165. Human Nutrition Research. (1) One hour of lecture/discussion per week. Prerequisites: 160. The types and methods of human nutrition research will be covered, with focus on the role of the nutritionist as part of a research team. Related topics such as research ethics, quality control, selection of dietary assessment systems, and sources of funding will be discussed. Assignments will include an evaluation of published research and design of a research diet. (SP)

166. Nutrition in the Community. (3) Three hours of lecture per week. Prerequisites: 166. Three hours of discussion per week required. Formerly Nutritional Sciences 166. This course addresses basic nutrition in the context of the community. It explores nutrition programs that serve various segments of the population and the relationships of these programs to nutrition policy at the local, national, and international levels. Community assessment is used as the basis for program planning, implementation, and evaluation. Specific needs of population groups (infants, children, women, and the elderly) are considered and questions of food security are investigated. (F) Hudson

170. Experimental Nutrition Laboratory. (4) Students will receive no credit for 170 after taking 171. Six hours of laboratory, one hour of discussion per week. Three hours of discussion per week. Prerequisites: 103, and a course in statistics. Formerly Nutritional Sciences 170. Basic principles and techniques used in human and...
animal nutrition research. Students design, execute, and analyze experiments. (SP) Aponte

171. Nutrition and Toxicology Laboratory. (4) Students will receive no credit for 171 after taking 170. One hour of lecture, one hour of discussion, and six hours of laboratory per week. Prerequisites: 103, 110, Molecular and Cell Biology 102 or equivalent. Formerly Nutritional Sciences 191. Students will be assigned a laboratory associate. The course covers a topic selected from the current research literature in nutritional science. (F,SP) Staff

190. Introduction to Research in Nutritional Science. (1) One hour of lecture/discussion per week. Prerequisites: Upper division standing. Formerly Nutritional Sciences 192. Students will be assigned a faculty mentor and will complete an independent research project. (F,SP) Staff

192. Junior Seminar in Dietetics. (1) One hour of lecture/discussion per week. Prerequisites: Upper division standing. Formerly Nutritional Sciences 192. Two seminar courses explore the professional roles and responsibilities of dietitians as well as career opportunities within the field. Current issues in the practice of dietetics will be discussed. Students will do research and present an oral report to the class. Each student will begin to develop his or her professional portfolio. (F) Mead

193. Introduction to Research in Toxicology. (1) One hour of seminar per week. Prerequisites: 110 or consent of instructor. Formerly Nutritional Sciences 193. Students will be asked to prepare an oral and written report on a topic selected from the current research literature in toxicology. (SP) Kubo

194. Senior Seminar in Dietetics. (2-4) Course may be repeated for credit. A student may take between 2-4 units per semester but must complete a total of 8 units to qualify for the College Honors Distinction. Three hours of work per week per unit. Prerequisites: Upper division standing. Formerly Nutritional Sciences 194. This course will cover the changes that are occurring in the field of dietetics. Students will explore revisions of the national nutritional standards and guidelines, issues related to complementary and alternative nutrition practices, the area of genomics as it is expected to affect practice, professional ethics in the changing health care environment, reinforcement for professional services, legislation related to the field of dietetics, and other emerging issues. (SP) Mead

H196. Honors Research. (2-4) Course may be repeated for credit. A student may take between 2-4 units per semester but must complete a total of 8 units to qualify for the College Honors Distinction. Three hours of work per week per unit. Prerequisites: Upper division standing. Formerly Nutritional Sciences 196. Students will be assigned a faculty mentor. The course will address the changes that are occurring in the field of dietetics. Students will explore revisions of the national nutritional standards and guidelines, issues related to complementary and alternative nutrition practices, the area of genomics as it is expected to affect practice, professional ethics in the changing health care environment, reinforcement for professional services, legislation related to the field of dietetics, and other emerging issues. (SP) Mead

197. Field Study in Food and Nutritional Science. (1-3) Course may be repeated for credit. Approximately three hours field study per week per unit. Must be taken on a pass/failed basis. Formerly Nutritional Sciences 197. Superseded by Food and Nutritional Science 397. The purpose of the course is to provide exposure to campus organizations relevant to specific aspects of foods and nutritional science. Regular individual meetings with faculty sponsor and written reports required. (F,SP) Staff

198. Directed Group Study. (1-3) Course may be repeated for credit. One hour of group study per week per unit. Must be taken on a pass/failed basis. Prerequisites: Consent of instructor. Formerly Nutritional Sciences 198. Study of special topics in food science or nutrition that are not covered in depth in regular courses. (F,SP) Staff

199. Supervised Independent Study and Research. (1-3) Course may be repeated for credit. Approximately three hours of laboratory work per week per unit. Must be taken on a pass/failed basis. Prerequisites: Consent of instructor. Formerly Nutritional Sciences 199. Enrollment restrictions apply; see the introduction to Courses and Curricula section of this catalog. (F,SP) Staff

200. Advanced Organismal Nutrition and Metabolism. (3) Three hours of lecture/discussion per week. Prerequisites: 103, 160, and Molecular and Cell Biology 102 or equivalent. Formerly Nutritional Sciences 200. Students will be assigned a faculty mentor. The course examines metabolic pathways in intact organisms studied. Areas covered include the basis of nutrient requirements and nutritional assessment; the effects of diets on health; growth, development, and reproduction; the role of micronutrients; and major topics such as calcium, vitamins, and trace elements. (SP) Helferstein

201. Metabolic Regulation. (4) Four hours of lecture per week. Prerequisites: Consent of instructor. Formerly Nutritional Sciences 201. Students will be assigned a faculty mentor. The course examines metabolic and nutritional regulation in mammalian systems. Metabolic control enzymes and pathway fluxes in cells, tissues and the whole organism with emphasis on how metabolic control of pathways changes in response to nutritional status. Recent advances in methodologies for studying nutrient control of metabolism, ranging from molecular genetic to isotope techniques. (F) Staff

C210. Dietary Determinants of Cancer, Heart Disease, and Aging. (3) Three hours of lecture per week. Prerequisites: Consent of instructor. Formerly Nutritional Sciences 210. Students will be assigned a faculty mentor. The course examines an emphasis on micronutrient deficiencies as a major contributor to DNA damage, cancer, and aging. The influence of diet on atherosclerotic heart disease is examined. Emphasis on the role of dietary constituents proposed to have either toxic or preventative effects in the artery wall. Readings will consist of papers from the literature. Also listed as Molecular and Cell Biology C210. (SP) Amundson

211A-211B. Introduction to Research in Nutritional Science. (4-8;4-8) One hour of discussion and four hours of laboratory per week per unit. Credit and grade to be awarded on completion of sequence. Prerequisites: Restricted to graduate students in the nutrition program. Consent of instructor. Formerly Nutritional Sciences 211A-211B. Closely supervised experimental work under the direction of individual faculty members; an introduction to experimental methods and research approaches in areas of nutritional science. (F,SP) Napoli

212. Statistics in Nutrition Research. (1) One hour of lecture per week. Prerequisites: A course in statistics. Formerly Nutritional Sciences 212. Selection and application of statistical procedures to experimental designs, data analysis, and research. Assumptions and appropriateness of chi-square tests, T-tests, ANOVA, correlation and regression, multiple comparison procedures and non-parametric procedures. Challenges will be presented, and the solutions will be discussed. (F,SP) Staff

C219. Advanced Toxicology. (3,4) Three to four hours of lecture per week. Prerequisites: Consent of instructor. Formerly Nutritional Sciences 219. Students will be assigned a faculty mentor. The course examines advanced topics in toxicology that are not covered in depth in regular courses. Advances in methods for studying metabolism, ranging from isotopic to molecular genetics techniques. This course provides the foundation for pursuing research in nutrition, molecular biology, and for understanding nutrient and endocrine related diseases such as diabetes, birth defects, osteoporosis, obesity, and cardiovascular disease. (F) Napoli, Sul

230. Advanced Seminars in Nutritional Science. (1-8) Course may be repeated for credit. One hour of lecture/discussion per week. Must be taken on a satisfactory/unsatisfactory basis. Prerequisites: Graduation standing. Formerly Nutritional Sciences 290. Advanced study of topics in nutritional science. More than one section may be taken simultaneously. (F,SP) Staff

292. Graduate Research Colloquium. (1) Course may be repeated for credit. One hour of lecture/discussion per week. Must be taken on a satisfactory/unsatisfactory basis. Prerequisites: Consent of instructor. Formerly Nutritional Sciences 292. Presentation and discussion of current faculty research projects and experimental techniques in nutritional sciences. Three to four hours of study per unit per term will be required. Must be taken primarily for first year graduate students. (F) Staff

296. Research Review in Nutritional Science and Toxicology. Course may be repeated for credit. One to two hours of seminar per week. Must be taken on a satisfactory/unsatisfactory basis. Prerequisites: Consent of instructor. Review of current literature and discussion of original research. (F,SP) Staff

298. Directed Group Studies. (1-4) Course may be repeated for credit. One hour of lecture/discussion per week per unit. Prerequisites: Graduate standing and consent of instructor. Formerly Nutritional Sciences 298. Special study in various fields of nutritional science. Topics will vary depending on interests of qualified graduate students and availability of staff. (F,SP) Staff

299. Nutritional Science and Toxicology Research. (1-12) Course may be repeated for credit. Approximately four hours of research per week per unit. Prerequisites: Graduation standing and consent of instructor. (F,SP) Staff

302. Professional Preparation: Supervised Teaching Experience in Nutrition. (1-4) Course may be repeated for credit. Three to four hours of supervised teaching experience per week per unit. Prerequisites: Consent of instructor. Formerly Nutritional Sciences 302. May be taken concurrently and consent of instructor. Formerly Nutritional Sciences 302. Practical supervised teaching of nutrient affects. Advances in methods for studying metabolism, ranging from isotopic to molecular genetics techniques. This course provides the foundation for pursuing research in nutrition, molecular biology, and for understanding nutrient and endocrine related diseases such as diabetes, birth defects, osteoporosis, obesity, and cardiovascular disease. (F) Napoli, Sul
experience in teaching nutrition and food science at the university level; planning, presentation, and evaluation of instructional units. (F,SP) Bjeldanes

Ocean Engineering
(Chair of College of Engineering)

Group Office: 230 Bechtel Engineering Center, #1708
www.coee.berkeley.edu/oeceeng

Students interested in graduate study in ocean engineering should contact the Department of Mechanical Engineering for more information.

Optometry
(School of Optometry)

Office of the Dean: 351 Minor Hall #2020, (510) 642-3414
Office of Admissions: 397 Minor Hall #2020, (510) 642-9537
optometry.berkeley.edu

Dean: Dennis M. Levi, O.D., Ph.D.
Associate Dean for Academic Affairs: Gunilla Haegerstrom-Portny, O.D., Ph.D.
Associate Dean for Clinical Instruction: John C. Corzine, O.D.
Associate Dean of Patient Care and Academic Coordinator: Edward J. Revelli, O.D.
Director of Student Affairs and Graduate Admissions: Adviser: Richard C. VandeVeld, Ph.D.
Administrative Assistant: Susan M. Lin, O.D.
Clinical Director: Michael G. Harris, O.D., J.D., M.S.
Special Assistant to the Dean for Professional Affairs: Lawrence 8. Thol, M.B.A.
Director of Resident Programs: Christina S. Wilmer, O.D.
Residency Supervisor: A. Mikiy, O.D.
Chair, Graduate Group in Vision Science: Stanley A. Klein, Ph.D.

Professors

Anthony J. Adams, O.D., Ph.D. Color vision; assessment of retinal function
Ian L. Bailey, O.D., M.S. Corneal physiology; fixation disparity
Karen K. DeValois, Ph.D. Psychophysics and psychophysical methods and vision test design; nonlinear analysis of visual processes
Dennis M. Levi, Ph.D., FAAO. Mechanisms of pattern vision, psychophysics of visual development and spatial vision
John G. Flannery, Ph.D. Molecular biology of the retina in normal and disease states; neurobiology
Zzanne M. Fieszisz, O.D., Ph.D. Microbiology, infectious disease, corneal and tear physiology
Ralph D. Freeman, Ph.D. Neurophysiology and psychophysics of visual development and plasticity
Gunilla Haegerstrom-Portny, O.D., Ph.D. Clinical psychophysics and basic aspects of human color vision; binocular vision
Starkey A. Klein, Ph.D. Spatial vision; psychophysical methods and vision test design; nonlinear analysis of visual processes
Dennis M. Levi, Ph.D., FAAO. Mechanisms of pattern vision, psychophysics of visual development and spatial vision
Clifton M. Schor, O.D., Ph.D. Binocular vision; human development, ocular motility, strabismus, and amblyopia
Richard C. VandeVeld, O.D., Ph.D. Organization, development, and plasticity of mammalian visual system
Christine F. Wildsoet, O.D., Ph.D. Myopia and eye growth regulation, animal models for mechanisms underlying ametropia and myopia, etiology of human myopia and anisometropia, optical, biological, and genetic perspectives
Jay M. Enoch (Emeritus), O.D., Ph.D. Retinal receptor optics
Marianne G. Harris, O.D., Ph.D. Visual neurophysiology, development and plasticity, visual-evoked potentials
Kenneth A. Polish (Emeritus), O.D., M.S. Corneal physiology; contact lenses; ocular effects of topical medications

Associate Professors

Bruno Olshausen, Ph.D.
Austin Roorda, Ph.D. Adaptive optics, optics of the human eye
Assistant Professors

Xiaohua Gong, Ph.D. Use of genetically engineered animal models for multidisciplinary study of development and diseases of the eye
Michael Silver, Ph.D. Neural correlates of human visual perception and attention

Professor of Clinical Optometry

Deborah A. Orel-Bixler, O.D., Ph.D. Assessment of visual abilities in infants, children and special needs population; visual evoked potentials; vision screening; and photorefration

Associate Professors of Clinical Optometry

Robert B. DiMartino, O.D., M.S. Ocular disease and ocular therapeutic pharmacology, electronic instructional technology
Werner A. Verdon, O.D., Ph.D. Clinical and visual electrophysiology, inherited and acquired retinal diseases, and color vision

Senior Lecturers

J. David Grisham, O.D., M.S. Binocular vision anomalies, reading disabilities, vision of children
Michael G. Harris, O.D., J.D., M.S. Contact lenses and corneal physiology
Darrell B. Carter (Emeritus), O.D., Ph.D. Ocular pharmacology: clinical optometry, fixation disparity

Affiliated Professors

Brian Barsky, Ph.D. (Electrical Engineering and Computer Sciences) Eugene Svetlits, Ph.D. University of California at Santa Cruz. (Chemistry and Psychobiology)

Clinical Professors

Dennis S. Burger, O.D.
Thomas M. Callan, O.D.
Stephen R. Chiu, O.D.
Bernard J. Dolan, O.D., M.S.
Robert B. Greer, O.D.
J. David Grisham, O.D., M.S.
Michael G. Harris, O.D., J.D., M.S.
Craig K. Hikita, O.D., M.P.H.
Donald R. Korb, O.D.
Edward J. Revelli, O.D.
Donald S. Santer, O.D.
A. Lee Sisco, O.D., M.S.
Lawrence S. Thol, O.D., M.B.A.
Karen L. Walker-Brandreth, O.D.
Leslie L. Waletz, O.D.
Gerald Westheimer, O.D., Ph.D., F.R.S.

Associate Clinical Professors

Charles H. Bailey, O.D., M.A.
Frank K. Baleyestey, O.D., M.S.
Shrin Banaz, M.S., M.D.
John C. Corzine, O.D.
Robert E. Dister, O.D., J.D.
Weylin E. Eng, O.D.
Darlene T. Filling, O.D.
Patsy L. Harvey, O.D., M.P.H.
Pia Hoenig, O.D., M.A.
Carl H. Jacobsen, O.D.
Curtis W. Kessell, O.D.
Jeffrey Ko, O.D.
George K. Lee, O.D.
Wesley T. Ota, O.D.
Paul H. Peng, O.D., M.D., J.S.
Timothy Sanders, O.D.
Diane H. Williams, O.D.
Barry C. Winston, O.D.
Russell Worrall, O.D.

Assistant Clinical Professors

Richard W. Bakker, O.D.
Kathryn A. Boe, O.D.
Karen Chester, O.D.
Selma Chon, O.D.
Gregory M. Empey, O.D.
Sarah Fisher, O.D., Ph.D.
Sara France, O.D.
Cheslyn M. Gan, O.D.
Michael R. Gass, O.D.
Michael A. Giacuzzi, O.D.
Maziar Hafaridi, O.D.
Daniel Harvitt, O.D., Ph.D.
Michelle J. Hof, O.D.
David Holcomb, O.D.
Stephen Ingram, O.D.
Ronald F. Janda, O.D., M.A.
Nicholas G. Kerry, O.D.
Jennie Kirby, O.D.
Heather M. Laskowski, O.D.
Andrea Le, O.D.
Clifford A. Lee, O.D.
Meng C. Lin, O.D., Ph.D.
Ronald R. Miller, O.D., M.D.
Andrew B. Mick, O.D.
Douglas Morse, O.D.
Armin Mika Moya, O.D.
Glenn Y. Ozawa, O.D.
Thomas Powell, O.D.
Yolanda M. Scheer, O.D.
Sara Frane, O.D.
Sasha Penn, O.D.
Mark M. Anderson, O.D.
Joy L. Utterberg, O.D.

Staff Optometrists

Mark E. Anderson, O.D.
Dennis W. Fong, O.D.

Optometry Programs

The School of Optometry provides professional training in the art and science of vision care. Drawing upon the principles of anatomy, optics, physiology, and psychology, the four-year professional program leads to the degree of Doctor of Optometry, which qualifies one to take national and state board examinations.

Doctors of Optometry are health care professionals. Optometry is a primary health care profession that encompasses the prevention and remediation of disorders of the vision system through examination, diagnosis, treatment, and/or management of visual efficiency, eye health, and related systemic manifestations. Optometry graduates are able to diagnose patients with ocular disease or systemic diseases with ocular manifestations. Recent changes in optometry laws across the United States have expanded the scope of optometric practice, giving practitioners responsibility for non-surgical pharmaceutical treatment of eye disorders and diseases.

Doctors of Optometry are educated in the sciences of anatomy, zoology, chemistry, physics, mathematics, microbiology, disease processes and detection, pharmacology, behavioral science, social science, public health, and many other related fields. The school prepares students for comprehensive training in vision care aimed at training primary eye care practitioners. The first year emphasizes advanced study of sciences which form the background of optometry, such as ocular anatomy, medical physiology and biochemistry, ocular pathology, physiology, microbiology, and neuroanatomy, the psychophysics of vision, vision science, geometric optics, ocular pharmacology, and the theoretical and practical optics. The second and third years are devoted to the science of optometry and the acquisition of skills in examination procedures. Although clinical participation is involved in all four years, active responsibility for patient care begins in the spring preceding the third year. The fourth year is devoted to primary care practice of optometry, the development of special areas, including contact lenses, binocular and infant vision, vision functions, ocular health, aniseikonia, vision of the elderly, and low vision.
Optometry offers a wide variety of interesting, challenging, and rewarding careers in private practice, in hospitals and other health organizations, and in public service. The education acquired at the School of Optometry provides today's Doctors of Optometry with the knowledge and skill necessary to meet the challenges of providing vision care.

For further information about the School of Optometry, please consult our web site at optometry.berkeley.edu.

Optometric Residency Program

A one year Optometric Residency program is available to Doctors of Optometry seeking advanced optometric training. Areas of clinical study include Binocular Vision, Contact Lens and Cornea, Low Vision, Ocular Disease, Pediatrics, and Primary Care.

Successful completion of the program leads to the awarding of the Optometric Residency Certificate.

For further information about the Optometric Residency Program, please see the program web site at optometry.berkeley.edu; contact the Director of Residency Programs at the Tang Eye Center, 2222 Bancroft Way, Berkeley, CA 94720-2020; or send an e-mail to cwilmer@berkeley.edu.

Vision Science Graduate Program (M.S. and Ph.D. Degrees)

Chair of Vision Science: Stanley A. Klein, Ph.D.
Office of Admissions: 524 Minor Hall #2020, (510) 642-9804
Home page: vision.berkeley.edu/VSP
Faculty link: vision.berkeley.edu/VSP/content/people/faculty.html

The Graduate Program in Vision Science leads to the M.S. and Ph.D. degrees. The program is administered by the Group in Vision Science, representing cross-disciplinary faculty from the School of Optometry and the Departments of Psychology, Computer Science, Molecular and Cell Biology, Neuroscience, and Bioengineering, among others. The faculty is distinguished in their accomplishments and diverse in their areas of expertise. Research facilities available to graduate students in vision science are among the best in the world.

The Graduate Program in Vision Science provides training in a wide variety of topics pertaining to vision. These include the optics of the eye, molecular and cell biology of the eye, anatomy and neurophysiology of the retina and visual pathways, computational vision, clinical aspects of vision, and more. Training is designed to prepare students for academic careers in research and teaching in vision science, optometry, ophthalmology, bioengineering, psychology, biology, and other related disciplines. It also prepares students for research careers in industrial settings in related areas.

Admission to this program requires a bachelor's degree in a relevant discipline (such as biology, computer science, engineering, or psychology) or a doctoral degree in a relevant field or optometry.

For further details about the requirements for the Vision Science Graduate Program, go to vision.berkeley.edu. To contact our admissions office, please e-mail vision@spectacle.berkeley.edu or write to Student Affairs Officer, Group in Vision Science, University of California, Berkeley, 524 Minor Hall #2020, Berkeley, CA 94720-2020.

Optometry

Lower Division Courses

C10. The Eye and Vision in a Changing Environment. (2) Two hours of lecture per week. Course covers introduction to the basis of common sight reducing visual disorders with major health implications for society—e.g., myopia, cataracts, diabetic hyper- tension, visual power measurement and lens thickness power relationships and considerations in designing prescription eyewear. Characteristics of absorptive lenses, ophthalmic coatings, lens materials, and their role in ocular protection. (F)

222B. Advanced Clinical Optics. (2) Two hours of lecture per week. Prerequisites: Vision Science 206B. Formerly 126. Ophthalmic lens aberrations and minimization. Ophthalmic lens designs relating to anisometropia, aniseikonia, and high refractive errors. Optics of the eye, contact lens optics, and optical principles of low vision aids. Environmental vision and related ophthalmic standards. (SP)

226. Systemic Disease. (5) Four hours of lecture and two hours of discussion per week. Prerequisites: Vision Science 206B. Formerly 126. This course series consists of the pathophysiology, pharmacotherapy, and clinical management of systemic and ocular diseases through a combination of lecture and problem-based learning approaches. Disease processes will be emphasized and include cellular injury and repair, inflammation, infection, degeneration, and neoplasia. Neurologic, cardiovascular, endocrine, pulmonary, and congenital disease and their relative ocular manifestations will be presented. The basic principles of pharmacology will be followed by overviews of drug therapies of each system. The role of the optometrist in the health care system will be emphasized. (F)

230A-230B. Graduate General Clinical Practice. (2-4-4) Course may be repeated for credit. Four hours of clinic per credit hour. Prerequisites: O.D. degree. General optometric practice week per credit hour, including ophthalmic examination, dispensing, consultation, and subsequent vision care of patients, performed independently by graduate student clinicians. (F,SP)

231A-231B. Graduate Specialty Clinics. (2-8-8) Course may be repeated for credit. Four hours of clinic per week per unit. Prerequisites: O.D. degree. Clinical examination of patients in designated specialty clinics. More than one clinical specialty may be taken simultaneously. (F,SP)

236. Ocular Manifestations of Systemic Disease. (5) Four hours of lecture and two hours of discussion per week. Prerequisites: 226; Formerly 136. This course series consists of the pathophysiology, pharmacotherapy, and clinical management of systemic and ocular diseases through a combination of lecture and problem-based learning approaches. Disease processes will be emphasized and include cellular injury and repair, inflammation, infection, degeneration, and neoplasia. Neurologic, cardiovascular, endocrine, pulmonary, and congenital disease and their relative ocular manifestations will be presented. The basic principles of pharmacology will be followed by overviews of drugs used to treat diseases of each system. The role of the optometrist in the health care system will be emphasized. (SP)

240. Diagnosis and Treatment of Sensory/Motor Anomalies. (3) Two and one-half hours of lecture per week and 16 hours of laboratory per semester. Prerequisites: Vision Science 217B, Vision 217D. Diagnosis and treatment of heterophoria, accommodative, vergence and oculomotor anomalies including sensory anomalies and amblyopia. Rationale and methods for treatment with lenses, prism, vision training. Design and implementation of treatment programs. (SP)

241. Advanced Management and Rehabilitation of Sensory/Motor Anomalies. (3) Two and one-half hours of lecture per week and 16 hours of laboratory per semester. Prerequisites: Vision Science 217B, Vision 217D. Advanced diagnosis, prognosis and treatment of strabismus, neurologic oculomotor disorders, amblyopia, and other associated sensory anomalies. Assessment and implementation of developmental and acquired visual perceptual disorders in relation to learning disabilities. Design and implementation of treatment programs. (F)
246. Diagnosis and Treatment of Anterior Segment Ocular Disease. (4) Four hours of lecture per week. Prerequisites: 238. Formerly 146. This course series consists of the pathophysiology, pharmacology, and clinical management of systemic and ocular diseases through a combination of lecture and problem-based learning approaches. Disease processes will be emphasized and include cellular injury and repair, inflammation, infection, degeneration, and neoplasia. Neurologic, cardiovascular, endocrine, pulmonary, and congenital disease processes and their relative ocular manifestations will be presented. The basic principles of pharmacology will be followed by overviews of drugs used to treat diseases of each system. The role of the optometrist in the health care system will be emphasized. (F)

251. Low Vision. (2.5) Two and one-half hours of lecture per week. Prerequisites: 200D. Formerly 151. Epidemiology and etiology of low vision. Optical mechanisms of low vision aids. Optometric examination and treatment of the low vision patient. Interdisciplinary re habilitation resources, counseling, and referral. (F)

256. Diagnosis and Treatment of Posterior Segment Ocular Disease. (4) Four hours of lecture per week. Prerequisites: 246. Formerly 156. This course series consists of the pathophysiology, pharmacology, and clinical management of systemic and ocular diseases through a combination of lecture and problem-based learning approaches. Disease processes will be emphasized and include cellular injury and repair, inflammation, infection, degeneration, and neoplasia. Neurologic, cardiovascular, endocrine, pulmonary, and congenital disease processes and their relative ocular manifestations will be presented. The basic principles of pharmacology will be followed by overviews of drugs used to treat diseases of each system. The role of the optometrist in the health care system will be emphasized. (SP)

260A. Contact Lenses: Examination Principles and Practice. (3) Two hours of lecture and two hours of laboratory per week. Formerly 160A. Examination procedures and instrumentation used in monitoring the ocular surface, contact lenses, contact lens inspection, care, and handling. Physical and optical properties of contact lenses. Fitting contact lenses to the human eye, clinical implications. The Sarver Lecture series in Contact Lenses (12 hours on a Saturday and Sunday.) (SP)

270A. Eyecare Business and Professional Management I. (1) One hour of lecture per week. Must be taken on a satisfactory/unsatisfactory basis. Prerequisites: 200B. Ethics in general, and in an optometric setting. Presentation and discussion of business management, goal setting, epidemiological trends and health care implications, and micro-economics as it affects the practice of optometry. (SP) Bailey

270B. Eyecare Business and Professional Management II. (1) One hour of lecture per week. Must be taken on a satisfactory/unsatisfactory basis. Prerequisites: 270A. Patient scheduling, patient communication, systems design and office flow, accounting and finance in an optometric setting, fee computation techniques. (F) Bailey

270C. Eyecare Business and Professional Management III. (2) Two hours of lecture/seminar per week. Prerequisites: 270A. Entrepreneurship, financing alternatives, business loans, human resources, marketing, personal finance, business law as it affects optometry. (SP) Bailey, Tham

281A-281B. Graduate Clinical Rounds. (1-3;1-3) Course may be repeated for credit. Seminar/patient demonstration. Must be taken on a satisfactory/unsatisfactory basis. Prerequisites: O.D. degree. Presentation and discussion of the diagnosis, etiology, progression, and treatment of selected clinical cases. (F,SP)

291A-291B. Optometry Research Project. (1;1) One hour of discussion per week. Credit and grade to be awarded on completion of sequence. Must be taken on a satisfactory/unsatisfactory basis. Prerequisites: 290A-290B. Formerly 191A-191B. Thesis research for optometry students. Presentation of research results. (F,SP) Cohn

292A-292B. Graduate Optometry Seminar. (1-3;1-3) Course may be repeated for credit. Seminar. Must be taken on a satisfactory/unsatisfactory basis. Prerequisites: O.D. degree. Graduated approaches on selected topics in clinical optometry. (F,SP)

298A-298B. Independent or Group Studies. (1-6;1-6) Course may be repeated for credit. Directed studies. Prerequisites: O.D. degree. Directed studies on a selected topic(s) within optometry. (F,SP)

299A-299B. Graduate Optometry Research. (2-4;2-4) Course may be repeated for credit. Research. Prerequisites: O.D. degree. Directed research on a selected topic within clinical optometry. (F,SP) Professional Courses

430B-430C. Optometry Clinics. (9;9) Two hours of seminar per week and a minimum of 18 hours of clinic per week. Prerequisites: 430A. Examination of patients in a primary care setting, prescribing of optometric therapy, management of emergency procedures, and vision screenings of children and adults. (F,SP)

435. Advanced Procedures in Ocular Disease Diagnosis. (1) Two hours of laboratory per week. Must be taken on a passed/not passed basis. Instrumentation, techniques, and principles for examination, diagnosis, and treatment of ocular disease. Introduction to the examination of patients in a primary care setting. Diagnosis, prognosis, treatment, patient management and follow-up. (F,SP)

441B-441C. Specialty Clinics. (7;7) Minimum of fifteen to twenty hours of clinic per week. Prerequisites: 440A and 441A (offered Summer Session only). Examination, diagnosis, prognosis, treatment, and/or management of patients in specialty clinics: ocular disease, contact lenses, binocular vision, ophthalmic optics, and geriatric eye care. (F,SP) Peng

440B-440C. Advanced Optometry Clinic. (9;9) Two hours of seminar per week and a minimum of 22 hours of clinic per week. Prerequisites: 441A, 441B. Examination of patients in a primary care setting. Diagnosis, prognosis, treatment, patient management and follow-up. (F,SP)

450A-450B. Grand Rounds and Seminar. (2;2) Two hours of discussion per week. Prerequisites: 440A. Formerly 450B-450C. Presentation of clinical cases demonstrating basic and advanced optometric care, including diagnosis, treatment, and patient management. (F,SP)

452. Current Concepts in Ocular Disease. (1) One hour of seminar per week. Prerequisites: 440B and 441B. Recent advances in the detection, diagnosis, and management of ocular disease. (SP)

499. Supervised Independent Study. (1-6) Must be taken on a satisfactory/unsatisfactory basis. Prerequisites: Consent of instructor. Independent study. (F,SP) Staff

Vision Science

Lower Division Courses

24. Freshman Seminars. (1) Course may be repeated for credit as topic varies. One hour of seminar per week. Sections 1-2 to be graded on a letter-grade basis. Sections 3-4 to be graded on a passed/not passed basis. The Freshman Seminar Program has been designed to provide new students with the opportunity to explore an intellectual topic with a faculty member in a small seminar setting. Freshman seminars are offered in all campus departments, and topics vary from department to department and semester to semester. Enrollment limited to 15 freshmen. (F,SP) Staff

84. Sophomore Seminar. (1,2) Course may be repeated for credit. One hour of seminar per week for four weeks. Prerequisites: 24. Formerly 191A-191B. Thesis research for optometry students. Presentation of research results. (F,SP) Cohn

R prefix=course satisfies R&C requirement AC suffix=course satisfies American Cultures requirement

*Professor of the Graduate School
†Recipient of Distinguished Teaching Award

Upper Division Courses

198. Group Studies for Advanced Undergraduates. (1-4) Supervised group study. Must be taken on a passed/not passed basis. Prerequisites: Upper division status and consent of instructor. (F,SP) Staff

199. Supervised Independent Study and Research. (1-4) Course may be repeated for credit. Must be taken on a passed/not passed basis. Prerequisites: Upper division status and consent of instructor, the student’s major adviser and the departmental chair. Supervised independent study and research. Enrollment restrictions apply; see the Introduction to Courses and Curricula section of this catalog. (F,SP) Staff

Graduate Courses

201A-201B. Seminar in Vision Science. (2,2) Course may be repeated for credit. Two hours of seminar per week. Prerequisites: Consent of instructor. Graduate seminar in vision science. (F,SP)

203A. Geometric Optics. (4) Three hours of lecture, two hours of laboratory, and one hour of discussion per week. Formerly 101. Geometrical methods applied to optics of lenses, mirrors, and prisms. Thin lens eye models, magnification, aberration, prism properties of lenses, thick lenses. (F)

205A. Optical System and Physical Optics. (4) Three hours of lecture, two hours of laboratory, and one hour of discussion per week. Prerequisites: 403A. Formerly 102. Principles of optical systems, including behavior of linear and non-linear optical devices, and physical applications of apertures and stops, aberrations and optical instruments. Optics of the eye. Selected topics in physical optics, diffraction, interference, polarization. (SP)


206A. Anatomy and Physiology of the Eye. (2) Four hours of lecture for seven and one-half weeks. This course focuses on the anatomy and physiology of the eyeball. Overview of the gross anatomy of the eye followed by eye-relevant aspects of the molecular biology. Cellular and molecular details of structure and function of each of the various non-neural components. (F) Gong, Fleizig

206B. Anatomy and Physiology of the Eye and Visual System. (2) Twenty-six hours of lecture and eight hours of laboratory for seven and one-half weeks. Prerequisites: 206A. Formerly 106B. Structure and function of the tissues of the eye, ocular appendages, and the central visual pathways. Basic concepts of physiology, neuroanaesthesia, and immunological processes as they relate to the eye and vision. Foster an appreciation of the pathophysiology of various disease processes. Convey the importance of anatomy and physiology in the medical approach to ocular disease processes. (F,SP)

206C. Anatomy and Physiology of the Eye and Visual System. (2) Four hours of lecture for seven and one-half weeks. Prerequisites: 206A-206B. Formerly 106C. Problem-based learning approach using clinical case examples. Continuation of 206A. (F,SP)

206D. Neuroanatomy and Neurophysiology of the Eye and Visual System. (2) Four hours of lecture for seven and one-half weeks. Prerequisites: 206A (must be taken concurrently). Formerly half of 206A. Structure

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and function of the neurosensory retina, photoreceptors, RPE including blood supply. Current concepts of etiology and management of major retinal conditions. Overview: morphology, physiology, and electrophysiologic testing and new genetic approaches. Structure and function of the early visual pathway including retinal ganglion cells, optic nerve, lateral geniculate nucleus, and visual cortex. Fugapal re- sponses. Specialization in the visual cortex. (F) Flan- nery, Freeman

212A. Optics and Dioptrics of the Eye. (F) Two hours of lecture per week for five weeks plus library ass- ignments. Prerequisites: Consent of instructor. (T) Introduction for graduate students. Visual pathways will be covered in depth. Focus on basic principles of classic and modern geometric optics (thick lens sys- tems, mirrors, prisms, apertures, and stops) and physical (interference, diffraction, and polarization) with emphasis on dioptrics of the human eye (including schematic eyes, aberrations, and entoptic phe- nomena). (F)

212B. Visual Neurophysiology and Development. (2) Three hours of lecture per week for five weeks plus library assignment. Prerequisites: Consent of instructor. (T) Introduction for graduate students. Visual pathways will be covered in depth. Focus on basic principles of classic and modern geometric optics (thick lens sys- tems, mirrors, prisms, apertures, and stops) and physical (interference, diffraction, and polarization) with emphasis on dioptrics of the human eye (including schematic eyes, aberrations, and entoptic phe- nomena). (F)

212D. Anatomy and Vegetative Physiology of the Eye. (2) Three hours of lecture per week for nine weeks. Prerequisites: Consent of instructor. Introduction for graduate stu- dents to sensory aspects of light and color vision in- cluding: psychophysical methods, spectral response of the eye, mechanisms of sensitivity control, dark adapta- tion, color discrimination, mechanisms of normal and defective color vision. (SP)

212F. Spatial and Binocular Vision, Eye Move- ments, and Motion Perception. (2) Three hours of lecture and library assignments per week for five weeks. Prerequisites: Consent of instructor. Introduction for graduate stu- dents to sensory aspects of light and color vision in- cluding: psychophysical methods, spectral response of the eye, mechanisms of sensitivity control, dark adapta- tion, color discrimination, mechanisms of normal and defective color vision. (SP)

212G. Molecular Genetics of Vertebrate Eye Develop- ment and Diseases. (3) Three hours of lecture for five weeks. Prerequisites: Graduate student in vision science or consent of instructor in charge. The primary focus of this course is the molecular basis for vertebrate eye development and related disease. This course will cover the basic principles of molec- ular and cell biology, commonly used techniques and experimental approaches, as well as the biological mechanisms for vertebrate eye development and related eye disease disorders. In identifying important mole- cular genes and the approaches used to identify them will be discussed. (SP) Ganz

215. Visual System Development. (2) Two hours of lecture per week. Prerequisites: 206B. Formerly 115S. Development of the eye and visual system. Normal development of the eye, retina, and central visual pathways. Effects of visual assessment on oculo-motor function and visual function in human infants. Refraction and re- fractive error in infants and children. Development of visuomotor function, spatial vision, color vision, binocu- lar vision, and depth perception. (F)

C216. Color Vision. (2) Course may be repeated for credit with consent of instructor. Two hours of lecture per week. Prerequisites: Consent of instructor. Selected top- ics from color vision, vision mechanisms, specific and dis- crimination, psychophysics and neurophysiology of color processing. Color and brightness perception. Stiles two-color increment threshold measures, inter- action of color and form, color vision anomalies. (F,SP)

217. Oculomotor Functions and Neurology. (2) One and one-half hours of lecture and two hours of labora- tory per week. Prerequisites: 203B or consent of in- structor. Formerly 117. Neuro-anatomical pathways for the control of eye position and movement; gaze hold- ing, image stabilization and tracking eye movement (f Gustafson); the central nervous system (pallidum, substantia nigra, superior colliculus, red nucleus, and primary visual cortex). Psychophysics of eye movements. (F,SP)

219. Binocular Vision and Space Perception. (2) One and one-half hours of lecture and ten hours of labor- atory per week. Prerequisites: 203A-203B. Formerly 181P. Principles of binocular vision, normal and defective color vision. (SP)


C290A. Vision A: Quantitative, Perceptual, and Physiological Aspects. (2) Three hours of lecture per week for seven and one-half weeks. Prerequisites: Consent of instructor. The course will present basic material on the retina and visual pathways, psychophysical measure- ments, visual sensitivity, color vision, and the estimation of disparity and motion. Introduction to front-end visual processing in mammalian visual optic systems, anatomy and physiology of retina, lateral geniculate nucleus, and primary visual cortex. Psychophysics of color, light and dark adaptation, spatial contrast sensi- tivity, spatial and temporal resolution, and contrast sensi- tivity, motion and disparity measurement. Connections between psychophysics and physiology. Relevant modeling techniques such as linear systems, signal detection theory, and information theory will be intro- duced and applied. There will be an accompanying laboratory which the students can register for separately. Also listed as Psychology C215A, Computer Science C293A, and Molecular and Cell Biology C264A.

C290B. Vision B: Quantitative, Perceptual, and Physiological Aspects. (2) Three hours of lecture per week for seven and one-half weeks. Prerequisites: Consent of instructor. The course will present basic material on inferring 3D from visual information. This will include disparity, motion, texture, shading, and oc- clusion. Introduction to the psychophysics and math- ematical analysis underlying the inference of 3D scene properties from 2D retinal images. Psychophysics of various cues to 3D shape and spatial layout such as texture, contour, shading, disparity, and structure from motion. Geometrical analysis of these cues. Prob- abilistic theory for optimal combination of cues and es- timates. Applications of these ideas to the biology of V1, V2, V4, and higher areas. Also listed as Psychol- ogy C215B, Computer Science C293B, and Molecular and Cell Biology C264B.

C290C. Vision C: Perceptual Organization. (2) Three hours of lecture per week for seven and one-half weeks. Prerequisites: Consent of instructor. This course will cover "Perceptual level" visual processing, including the perception of objects, their properties, and the deter- mination of part-whole structure from optical images. The approach will be interdisciplinary, including ma- nipulation of perceptual, psychophysiological, neuro- psychophysiological, and neuroscientific approaches. Specific topics include perception of color, grouping, figure-ground organization, modal and amodal com- bination and part-whole structure from optical images. Also listed as Molecular and Cell Biology C264C, Psychology C215C, and Computer Science C293C.

C290D. Vision D: High-Level Vision. (2) Three hours of lecture per week for seven and one-half weeks. Prerequisites: Consent of instructor. This course will cover "Perceptual level" visual processing, including the perception of objects, their properties, and the deter- mination of part-whole structure from optical images. The approach will be interdisciplinary, including ma- nipulation of perceptual, psychophysiological, neuro- psychophysiological, and neuroscientific approaches. Specific topics include perception of color, grouping, figure-ground organization, modal and amodal com- bination and part-whole structure from optical images. Also listed as Molecular and Cell Biology C264D, Psychology C215D, and Computer Science C293D.

C290L. Vision Laboratory: Quantitative, Perceptual, and Physiological Aspects. (1) Course may be re- peated for credit. Three hours of lecture and one-half hour of laboratory per week. Prerequisites: Consent of instructor. Quantitative analysis of psychophysical proper- ties of spatial, color, and temporal binocular vision, motion sensitivity and adaptation, and various psychophysical and physiological mechanisms. Also listed as Psychology C215L, Computer Science C293L, and Molecular and Cell Biology C264L.

298. Group Studies, Seminars, or Group Research. (1-6) One to four hours of lecture per week. Group students of selected topics. Advanced studies in various subjects through special seminars on topics to be se- lected each year. Informal groups studying special problems, group participation in experimental problems and analysis. (F,SP)

299. Research in Vision Science. (1-12) Hours vary- ed. Prerequisites: Consent of Instructor. Research. (F,SP)

301. Individual Study for Master’s Students. (1-6) Course does not satisfy unit or residence requirements for master’s degree. Must be taken on a satisfactory/unsatisfactory basis. Prerequisites: Consent of in- structor. Individual study for the comprehensive re- quirements in consultation with the adviser in vision science. (F,SP)

302. Individual Study for Doctoral Students. (1-6) Course does not satisfy unit or residence require- ments. Must be taken on a satisfactory/unsatisfactory basis. Prerequisites: Consent of instructor. Individual study in consultation with the adviser in vision science, intended to provide an opportunity for qualified stu- dents to prepare themselves for the various exami- nations required for the Ph. D. (F,SP)

Professional Courses

300. Teaching Methods in Vision Science. (1) One hour of class each other week. Must be taken on a satisfactory/unsatisfactory basis. Prerequisites: Grad- uate standing in vision science. Instruction in teaching methods and materials, in vision science and optom- ometry; practice teaching in classrooms and laboratory. (F,SP) Silver

Interdepartmental Studies Courses

Upper Division Courses

IDS 114A-114B. Advances in Aging. (2) Course may be repeated for credit. Two hours of lecture per week. Prerequisites: High school biology and chem- istry. This interdisciplinary course will single out specific topics in aging of great current interest and present lectures on several aspects of each topic (biomedical, health, socio-economic, legal, and ethical). Each semester a different topic will be presented. Invited speakers with special expertise in these areas will par-
Peace and Conflict Studies
(College of Letters and Science)

Group Major Office: 101 Stephens Hall, (510) 642-4466
ias.berkeley.edu/iastp2006/Programs.asp
Chair: Jerry Sanders

Teaching Faculty
Amy Gurwitz (Peace and Conflict Studies)
Michael Jager (Classics, Peace and Conflict Studies)
Edith Ng (Peace and Conflict Studies)
Beth Roy (Peace and Conflict Studies)
Jenny W. Sanders (Peace and Conflict Studies)
Rachel Shigekane (Human Rights Center)
Darius Zahedi (Peace and Conflict Studies)
Darren Zook (International and Area Studies)

Program in Peace and Conflict Studies

Peace and Conflict Studies (PACS) introduces students to peace, conflict, and world order through critical analyses of the social, economic, political, and ecological dimensions of war, violence, and peace. PACS courses are drawn from a number of disciplines and are expected to pursue their studies from an interdisciplinary perspective. PACS majors are also encouraged to develop an integrative understanding of peace theory, research, and practice, taking advantage of internship opportunities in both local and global settings. The PACS curriculum is designed to provide students with breadth and depth in their study of peace and conflict: breadth is accomplished through two of six designated survey fields and depth by area of concentration. Areas of concentration may be chosen from the following subject areas: Peace and Conflict Studies include: Human Security; Global Governance; Culture and Identity; Human Rights; Conflict Resolution; and Nonviolence. These areas may be combined with a specific regional focus. Students may also design an independent area of concentration in consultation with faculty and by petition to the program chair.

The Group Major

Declaring a major in Peace and Conflict Studies follows guidelines established by the College of Letters and Science. Students wishing to declare PACS:
1) Must be currently enrolled in or completed PACS 10 with a grade of C or better;
2) Are encouraged to have completed at least two semesters of a college-level foreign language or the equivalent; and
3) Must not be in their final semester of undergraduate work.

Students are reminded that 1) no coursework for the major may be taken on a pass/not pass basis; and 2) no course may be used to satisfy more than one major requirement.

Double Majors. Double majors must be approved by the dean of the College of Letters and Science. No more than two upper division courses may be used to satisfy requirements in both majors.

Courses Outside L&S. No more than three courses outside the College of Letters and Science may be used to fulfill group major requirements.

Study Abroad. The use of coursework taken at institutions outside the United States to fulfill major requirements must be in the equivalent of three semester-length upper division courses. Courses taken to fulfill the foreign language requirement for the group major are not included in this restriction.

Transfer Courses. A maximum of three upper division courses taken at other institutions (including course of the UC Education Abroad Program) may be transferred into the major. These courses will be accepted only as the third of the required upper division courses (regardless of unit value) and must be validated by the Office of Undergraduate Admissions and approved by a major adviser. Courses used to fulfill lower division prerequisites are not included in this restriction.

Honors Program. To graduate with honors from the group major in Peace and Conflict Studies, students must enroll in the two-semester honors seminar, IAS 10 and PACS H195 (spring only), and must obtain grade-point averages of 3.6 in the major and 3.5 in overall university coursework. The honors seminar is taken in addition to a student’s regular coursework for fulfilling requirements for the major and culminates in the writing of a senior thesis. The thesis is read by the PACS H195 instructor and at least one other faculty member who is selected by the student in consultation with the thesis instructor. Eligibility for participating in the Honors Program may be checked in the IAS office. Important Note: There is no guarantee that students accepted into the honors program will graduate with honors. Honors recommendations are made after graduation and are based on a number of factors including (but not limited to) major GPA, grades received for IAS 102 and PACS H195, and faculty advisor recommendations.

Course Plan

There is considerable flexibility within PACS for students to construct individual programs appropriate to their specific interests and geographical interests. There is, however, a structure built into the major and minimal course requirements must be met. This structure is designed to provide all PACS students with the knowledge base and intellectual reference points.

The program begins with lower division courses centered around PACS 10, Introduction to Peace and Conflict Studies, which provides a basic factual, theoretical, and methodological grounding in peace and conflict studies. There is also a language proficiency requirement which, depending on one’s language skills, could require language courses.

The upper division courses include two core courses; three methods courses; four concentration courses; and a senior seminar. Students may also enroll in the Honors Program (described above).

Lower Division (3 courses). PACS 10 and two courses from the following list: Anthropology 3, 3AC, 12AC; Development Studies C10; Economics 1, 2; Geography 4, 10, C15, 20, 40, 55; History 7B, 8B, 9, 10, 11, 12, 13B, 14; International and Area Studies 45; Latin American Studies 10; Political Science 2; Psychology 1; Sociology 1, 3, 3AC; Undergraduate Business Administration 10.

Foreign Language. All PACS students must be fluent in at least one modern language or the equivalent of advanced coursework in a foreign language.

Concentration (4 courses). In the concentration, students pursue advanced work in one particular area of peace and conflict studies. Concentrations can be self-defined or chosen from one of six designated categories: 1) human security; 2) global governance; 3) culture and identity; 4) human rights; 5) conflict resolution; and 6) nonviolence.

The Minor

The minor in PACS consists of six upper division courses. A minimum of three must be upper division PACS courses. The remaining courses must be selected from one (only) of the six PACS survey areas. Applications for the minor and course survey lists are available from the IAS office. Minor applications must be submitted no later than the last day of instruction of the semester immediately preceding the final semester.

Note: The following core requirements apply to the PACS minor program: 1) at least three courses must be completed at Berkeley; 2) all courses may be taken for grade or pass/no pass; 3) a minimum GPA of 2.0 must be achieved in the courses used to satisfy the minor requirements; and 4) no more than one course can satisfy requirements for both a major and a minor.
10. Introduction to Peace and Conflict Studies. (4) Four hours of lecture and one hour of discussion per week. This course introduces students to a broad range of issues, concepts, and approaches integral to the study of peace and conflict. Subject areas include the war system and war prevention, conflict resolution and nonviolence, human rights and social justice, development and environmental sustainability. Required of all peace and conflict majors. (F,SP) Sanders

24. Freshman Seminars. (1) Course may be repeated for credit as topic varies. One hour of seminar per week. The Berkeley Seminar Program has been designed to provide new students with the opportunity to explore an intellectual topic with a faculty member in a small, seminar-type setting. The program offers courses in all campus departments, and topics vary from department to department and semester to semester. (F,SP)

84. Sophomore Seminar. (1,2) Course may be repeated for credit as topic varies. One hour of seminar per week for 15 weeks. One and one-half hours of seminar per week for 10 weeks. Two hours of seminar per week per unit for eight weeks. Three hours of seminar per week per unit for five weeks. Sections 1-2 to be graded on a passed/not passed basis. Sections 3-4 to be graded on a letter-grade basis. Prerequisites: At discretion of instructor. Sophomore seminars are small interactive courses offered by faculty members in departments all across the campus. Sophomore seminars offer opportunity for close, regular intellectual contact between faculty members and students in the crucial second year. The topics vary from department to department and semester to semester. Enrollment limited to 15 sophomores. (F,SP)

94. Theory and Practice of Meditation. (1) Course may be repeated for credit. Two hours of discussion and practice per week. Must be taken on a passed/not passed basis. Prerequisites: Lower division standing: GPA 3.4 or better; consent of instructor, adviser and departmental chair; usually restricted to PACS majors. Supervised independent study course on topics related to PACS not covered in depth by other courses. A proposal must be formulated in consultation with the faculty sponsor with clearly stated objectives and means of implementation. (F,SP)

99. Supervised Independent Study and Research. (1-3) Course may be repeated for credit. Tutorial. Must be taken on a passed/not passed basis. Prerequisites: Formerly 127B. Formerly 127. Formerly 127A. Three hours of lecture per week. This course analyzes the evolution of the concept of human rights origins, how these ideas have been memorialized in international declarations and treaties, how they develop over time, and how they are enforced and monitored. We examine a variety of issues and controversies associated with human rights. Students will analyze world and community events through a human rights framework, utilizing some of the necessary tools to investigate, research, and think critically about human rights issues. (F,SP) Nagler

98. Directed Group Study. (1-3) Course may be repeated for credit. One and one-half hours of lecture per week for 15 weeks. One and one-half hours of seminar per week for 10 weeks. Two hours of seminar per week per unit for eight weeks. Three hours of seminar per week per unit for five weeks. Sections 1-2 to be graded on a passed/not passed basis. Sections 3-4 to be graded on a letter-grade basis. Prerequisites: At discretion of instructor. Directed group study course on topics related to PACS not covered in depth by other courses. A proposal must be formulated in consultation with the faculty sponsor with clearly stated objectives and means of implementation. (F,SP)

100. Peace Theory: Approaches and Analyses. (3) Three hours of lecture per week. Prerequisites: 10. This course explores the historical development of the field through analysis of the operative assumptions, logic, and differing approaches of the seminal schools and thinkers that have shaped the field. Students will become familiar with the body of literature and major thinkers that have shaped the field. Students will be required to do extensive reading and write a paper on a topic selected by the instructor. Students will also prepare a class presentation. Actual assignments may vary from term to term depending upon the subject. (F,SP)

125AC. War, Culture, and Society. (4) Four hours of lecture per week. This course examines the experience and meaning of war in the formation of American culture and society. It considers the profound influence war has had in shaping the identities and life chances of succeeding generations of American men and women. It will take special note of the role of race, ethnicity, and class as factors in the war experience. This course also explores how different interpretations of democracy and nationalism have served as a catalyst for social conflict and change in racial and ethnic identity and relations, especially as reflected in war. This course satisfies the American Cultures requirement. (SP) Sanders

126. International Human Rights. (4) Three hours of lecture per week. This course provides an overview to the historical, theoretical, political, and legal underpinnings that have shaped and continue to develop the body of international human rights. Students are introduced to substantive topics within human rights and provided an opportunity to develop critical thinking, oral presentation, and writing skills. We discuss where the concept of human rights originates, how these ideas have been memorialized in international declarations and treaties, how they develop over time, and how they are enforced and monitored. We examine a variety of issues and controversies associated with human rights. Students will analyze world and community events through a human rights framework, utilizing some of the necessary tools to investigate, research, and think critically about human rights issues. (F,SP) Sanders

127. Human Rights and Global Politics. (4) Three hours of lecture and one hour of discussion per week. Formerly 127B. Formerly 127A. This course examines the “revolution” in human rights theory, practice, and institutional building. The implications of viewing individuals as equal and endowed with certain rights is potentially far reaching. In the history of the modern world, many of those rights irrespective of the views of their government. Yet, we also live in a world of sovereign states with sovereign state’s rights. We see everyday a clash between the rights of the individual and lack of duty to fulfill those rights when an individual’s home state is unwilling or unable to do so. After introducing the idea of human rights, its historic development and various international human rights mechanisms, this course will ask what post-World War II conceptions of human rights mean for a number of specific issues including humanitarian intervention, international criminal justice, U.S. foreign policy, immigration, and economic rights. The course will ask how ideas about human rights, laws about human rights, and institutions to protect human rights have on how states and other global actors act, and how individuals have fared. (F,SP)

127A. Human Rights. (3) Three hours of lecture per week. Introduction to the developing international promotion and protection of human rights. The course supplies a foundation for understanding legal, political, philosophical, and economic aspects of human rights. We will examine United Nations, regional, and national systems on human rights; ideological and cultural perspectives; U.S. policy and practice; women’s human rights; sources of violations; and nongovernmental organizations. (F,SP)

128AC. Human Rights and American Cultures. (4) Four hours of lecture per week. This course analyzes the theory and practice of human rights for three groupings in the United States and examines questions of race and ethnicity as they are embodied in various international human rights instruments. This course utilizes an interdisciplinary approach to the study of developing systems, laws, and norms for the promotion and protection of human rights while considering each group’s own historical, political, literary, and cultural traditions. This course satisfies the American Cultures requirement. (F,SP)

130. Cross-Listed Topics. (1-4) Course may be repeated for credit. One to four hours of lecture per week. Prerequisites: Consent of instructor. This course is designed to accommodate cross-listed courses offered through other departments, the content of which is applicable to Peace and Conflict Studies majors. (F,SP)

135. Special Topics in Regional Conflict. (3) Course may be repeated for credit as topic varies. Three hours of lecture per week. Topics vary from semester to semester. The course will offer a critical interdisciplinary study of geo-political regions and the sources of their conflicts. (F,SP)

149. Global Change and World Order. (3) Three hours of lecture per week. This course will analyze emerging trends, patterns, and problems associated with the phenomenon of globalization. Particular attention will be given to world economic and social integration, ethno-religious nationalism and identity politics, domestic politics, and new forms of international alliances placed on the prospects of peace and world order in the post-cold war era. (F,SP) Sanders

150. Conflict Resolution: Theory and Practice. (3) Three hours of lecture per week. Inspired by the changing meaning of international conflict and the expanding mission of conflict resolution in the post-cold war era, this course will study the contemporary conflict and issues of conflict by examining the evolution in thinking about conflict, the resolution, and their application in practice. (F,SP) Sanders

153. Advanced Conflict Resolution. (4) Four hours of lecture per week. Prerequisites: 150 or consent of instructor. This course presents advanced theoretical foundations and procedural frameworks for interest-based conflict analysis and resolution and third party intervention in disputes, with a focus on mediation. The course builds cumulatively from simple negotiations and mediations to those of greater complexity, using a combination of cases, readings, and exercises to help students develop understanding and skill with multi-party, multi-issue disputes that evolve over time, particularly community disputes. Special emphasis will be given to the theory and technique of conflict/des-escalating volatile and angry conflict. (F,SP)

154. Multicultural Conflict Resolution. (4) Students will receive no credit for 154A after taking 154AC. Four hours of lecture per week. Prerequisites: 150 and 153, or consent of instructor. This course will investigate the similarities and differences involved with the concept of multicultural conflict. Students will participate in cross/multicultural conflicts. Topics will include cultural contrasts (e.g., values, communication, and problem solving styles), mediator (facilitator/negotiator), credibility, cultural (including gender) contributions to conflict resolution and unique ethical dilemmas. Course includes field immersion, conflict resolution process evaluation and design, and the opportunity to participate in mediation of a cultural mediation. (F,SP)

154AC. Multicultural Conflict Resolution. (4) Students will receive no credit for 154A after taking 154AC. Three hours of lecture per week. Prerequisites: 150 or consent of instructor. What is our understanding of culture and its relationship to conflict resolution? Is understanding cultural difference necessary for understanding conflict? Can mediators/counselors learn when they have their own cultural assumptions, values, and biases? What are the implicit assumptions of collaborative conflict resolution models? These questions and others will be explored in this experimental, interactive course. Students will examine how various cultural backgrounds and sociopolitical factors in this country (power, privilege, oppression, etc.) affect conflict resolution within the individual, group, and macro level. The emphasis will be on the major racial/ethnic groups in the United States, but other dimensions of diversity, including gender, class, sexual orientation, and dis-
ability will be discussed. This course satisfies the American Cultures requirement. (F.SP) Ng

157. Practicum in Peace and Conflict Studies. (2) Course may be repeated for credit. Two hours of seminar per week. Must be taken on a passed/not passed basis. 157, 164, 154, 155, and consent of instructor. This course provides the opportunity to apply, analyze, and evaluate the results of applying collaborative conflict resolution theory and models in situations modeled to be designed to assist students with developing skill and understanding with a focus on ethics and culture while completing specific substantive requirements for neutrals. (F.SP)

159. Conflict Resolution Intensive Training. (3) Course may be repeated for a maximum of 6 units. One eight-hour session each week for seven weeks. This course provides intensive experiential training in conflict resolution and mediation techniques. Participants are provided with the opportunity to apply, analyze, and evaluate in a supervised setting the results of applying conflict resolution mediation theory and models presented in other conflict resolution course work. Participants will develop and refine mediation techniques and skills through participation and observation of exercises and case studies specifically designed to focus on types and structures of interventions, roles and relationships, negotiation, and cultural diversity. (F.SP)

16A. Introduction to Nonviolence. (3) Students will receive 6 units for 16A after taking 164. Three hours of lecture per week. An introduction to the science of nonviolence, mainly as seen through the life and work of Mahatma Gandhi. Historical overview of nonviolence East to West and the West up to the American Civil Rights Movement and Martin Luther King Jr., with emphasis on the ideal of principled nonviolence and the reality of mixed or strategic nonviolence in practice, especially as applicable to problems of social justice and defense. (F.SP) Nagler

16B. Nonviolence Today. (3) Students will receive 2.4 units for 164B after taking 164. Three hours of lecture per week. Prerequisites: 164A or consent of instructor. The development of nonviolence since the Civil Rights Movement. Nonviolent theory and practice seen in recent insurrectionary movements (freedom struggles), social justice struggles, nonviolent intervention across borders and protection of the environment in the emerging world of global corporatism. (F.SP) Nagler

190. Senior Seminar. (4) Three hours of seminar per week. Prerequisites: Senior standing. Course should be taken in final year of study and is only open to PACS majors. Students prepare a major analytical paper on a topic of interest. Students present their paper in a seminar setting. Students will be evaluated on the quality of their work and instructor's evaluation. Prerequisites: 2.0 GPA, upper division courses must be taken at Berkeley. All lower division courses, including Philosophy 101). A minimum of three of the upper division courses must be taken at Berkeley. All courses in the minor must be completed on a letter-grade basis. Students must have an overall grade-point average of 2.0 in all six courses required for the minor. (A grade-point average of 2.0 must be maintained within the five upper division courses as well.)

**Philosophy (College of Letters and Science)**

Department Office: 314 Moses Hall, (510) 642-2722
philosophy.berkeley.edu
Chair: R. Jay Wallace, Ph.D.

**Professors**

Janet Broughton, Ph.D.  
John Campbell, D.Phil  
Hannah Ginsborg, Ph.D.  
Paolo Manzocchi, Ph.D.  
Alva Noe, Ph.D.  
Samuel Scheffler, Ph.D.  
John R. Searle, D.Phil.  
Hans Sluga, B.Phil.  
Barry G. Stroud, Ph.D.  
R. Jay Wallace, Ph.D.  
Ernest W. Adams, Ph.D.  
Charles S. Chaturvedi, Ph.D.  
Thompson Clarke, Ph.D.  
William Croot, Ph.D.  
Hubert L. Dreyfus, Ph.D.  
Benson Matses, Ph.D.  
Wallace I. Matson, Ph.D.  
David Rynin, Ph.D.  
Frits Staal, Ph.D.  
Bruce J. Vermazen, Ph.D.  

**Associate Professors**

John MacFarlane, Ph.D.  
Shemilton Rouphel, Ph.D.  
Daniel Warren, Ph.D., M.D.  

**Assistant Professors**

Branden Fleisch, Ph.D.  
Nicholas Kolodny, Ph.D.

**The Major**

**Lower Division.** 12A, 25A and 25B.

**Upper Division.** 100: one of the following: 104, 105, 107, 108. Two courses from the following four groups (no more than one course from any one group):

Group A: 122  
Group B: 125  
Group C: 131, 132  
Group D: 133, 135

A total of 48 units is required in the major program. Twenty units are required in the upper division in addition to the four required upper division courses. Students must take one course from the 160-178 series and one course from the 160-187 series and three additional upper division courses. Course 101 does not count towards the major.

Students should pass Philosophy 12A before the end of the junior year and should take Philosophy 100 as soon as possible after declaring the major.

One of the three additional upper division courses may be taken in another department, provided that the course selected is deemed by the major advisor to be relevant to the major. The course in the major may be taken on a passed/not passed basis.

**Honors Program.** With the consent of the major advisor, a student with an overall 3.5 grade-point average or higher and a grade-point average of 3.7 or higher in courses in the major may apply for admission to the honors program. The honors program requires completion of either 1) Philosophy H196, Senior Colloquium, or 2) a graduate seminar in the Philosophy Department, admittance to which is contingent upon approval of the instructor in charge. It also requires that the candidate write an acceptable honors thesis, for which four units of credit will be given under Philosophy H195.

**The Minor**

Required: Philosophy 25A or 25B; one of the following four courses: 104, 105, 107, 115; one of the following six courses: 122, 125, 131, 132, 133, 135; three additional upper division courses in philosophy (excluding Philosophy 101). A minimum of three of the upper division courses must be taken at Berkeley. All courses taken in the minor must be completed on a letter-grade basis. Students must have an overall grade-point average of 2.0 in all six courses required for the minor. (A grade-point average of 2.0 must be maintained within the five upper division courses as well.)

**Lower Division Courses**

2. Individual Morality and Social Justice. (3) Three hours of lecture and one hour of discussion per week. Introduction to ethical and political philosophy. (F.SP) Sluga

3. The Nature of Mind. (3) Three hours of lecture and one hour of discussion per week. Introduction to the philosophy of mind. Topics to be considered may include the relation between mind and body; the structure of action; the nature of desires and beliefs; the role of the unconscious. (F.SP) Searle

4. Knowledge and Its Limits. (3) Three hours of lecture and one hour of discussion per week. Introduction to the theory of knowledge. (F.SP)

5. Science and Human Understanding. (3) Three hours of lecture and one hour of discussion per week. Introduction to the Philosophy of Science. (F.SP) Sluga

6. Man, God, and Society in Western Literature. (4) Three hours of lecture and one hour of discussion per week. Philosophical issues as expressed in poetry, drama, and the novel. This course will compare and contrast the Greek, Medieval, and modern worlds, as reflected in their greatest literature, with special emphasis on the role of the community in reconciling conflicts between sub-groups in society and the individual’s ability to understand and control his own life. We will also follow man’s realization that the changing answers to these questions are themselves self-interpretaions.

7. Existentialism in Literature and Film. (4) Three hours of lecture and one hour of discussion per week. This course will consider existentialism as expressed in the works of Dostoyevsky, Melville, Kafka, Antonioni, Goddard, etc. (F.SP) Dreyfus

8. Introduction to Philosophy of Art. (4) Three hours of lecture and one hour of discussion per week. This course will consider the central features of art, and it will consider the aesthetic aspects. Topics will include: the definition of art, the institutional theory of art, intention, media of art, ontology of art-works, representation, expression, metaphor, and value. (F.SP) Wolffm

12A. Introduction to Logic. (4) Three hours of lecture and two hours of discussion per week. Syntax, semantics, and proof theory of sentential and predicate logic. (F.SP) Chihara

24. Freshman Seminar. (1) Course may be repeated for credit as topic varies. One hour of seminar per week. Sections 1-2 to be graded on a letter-grade basis.
sis. Sections 3-4 to be graded on a passed/not passed basis. The Freshman Seminar Program has been designed to provide new students with the opportunity to explore and a second year member with a faculty member in a small-seminar setting. Freshman seminars are offered in all campus departments, and topics vary from department to department and semester to semester. Enrollment is limited to 15 freshmen.

25A. Ancient Philosophy. (4) Three hours of lecture and one hour of discussion per week. This course provides an introduction to the ancient philosophy with special emphasis on the Presocratics, Plato, and Aristotle. (F) Code

C25A. Greek Philosophy and Ancient Philosophy. (4) Three hours of lecture per week. An introduction to the history and substance of Greek philosophy. Emphasis is on the development of philosophy through the Presocratics. Special attention given to Socrates, Plato, and Aristotle. Post-fourth century, Hellenistic philosophies (especially Stoicism, Cynicism, Epicureanism, and neo-Patonism) and their survival into the Roman world are treated more briefly. Also listed as Classics C36. (F,SP)

25B. Modern Philosophy. (4) Three hours of lecture and one hour of discussion per week. The history of modern philosophy from Descartes through Kant. (SP) Ginsborg

39. Freshman Seminar. Course may be repeated for credit. Three hours of seminar per week. Study of various fields of philosophy of special interest to freshmen. Topics will vary from semester to semester and will be individually arranged. Freshman seminars are restricted to 15 students each.

84. Sophomore Seminar. (1,2) Course may be repeated for credit. Three hours of seminar per week for 15 weeks. One and one-half hours of seminar per week per unit for 10 weeks. Two hours of seminar per week per unit for eight weeks. Three hours of seminar per week per unit for five weeks. Sections 1-2 to be graded on a passed/not passed basis. Sections 3-4 to be graded on a letter-grade basis with the discretion of instructors.

Sophomore seminars are small interactive courses offered by faculty members in departments across the campus. Sophomore seminars offer opportunity for close, regular intellectual contact between faculty members and students in the crucial second year. The topics vary from department to department and semester to semester. Enrollment is limited to 15 sophomores. (F,SP)

Upper Division Courses

General prerequisites: Students enrolling in any of the following upper division courses should have completed Philosophy 100. Additional prerequisites are indicated in certain courses.

100. Philosophical Methods. (4) Two hours of lecture and two hours of discussion per week. Prerequisites: Two courses from 2, 4, 25A, 25B. Restricted to students in the major. The course is designed to acquaint students with the techniques of philosophical reasoning through detailed study of selected philosophical texts and through extensive training in philosophical writing, based on those texts. Should be taken as early as possible after declaring the major. (F,SP) Warkany

104. Ethical Theories. (4) Three hours of lecture and one hour of discussion per week. Formerly C104. The fundamental concepts and problems of morality examined through the study of classical and contemporary philosophical theories of ethics. (F) Scheffler, Wallace

107. Moral Psychology. (4) Three hours of lecture per week. An investigation of central issues in moral psychology, such as: free will, weakness of will, self-deception, moral motivation, emotions, virtues, moral education. Williams

108. Contemporary Ethical Issues. (4) Course may be repeated for credit with consent of instructor if the content differs. Three hours of lecture and one hour of discussion per week. Prerequisites: 2 or 104, or two courses in philosophy, or consent of instructor. This course will be devoted to in-depth discussion of a variety of problems in moral philosophy raised by real-life questions of individual conduct and social policy. Its contents will vary from occasion to occasion. Possible topics include: philosophical problems posed by affirmative action, abortion, euthanasia, capital punishment, terrorism, war, poverty, and climate change. (F,SP) Kolodny

109. Freedom and Responsibility. (4) Three hours of lecture per week. A systematic examination of freedom and responsibility in the way it is discussed in the following topics will be addressed: (among others): the relations between free will, freedom of action, and autonomy; moral responsibility and its conditions; naturalism, determinism, and its relevance for human freedom; practical deliberation and the structure of the will; weakness and strength of will. Readings may be drawn from both historical and contemporary sources. (F,SP)

113AC. Philosophical Perspectives on Race and Culture. (4) Three hours of seminar per week. Prerequisites: Consent of instructor. The aim of the course is to examine some of the philosophical issues relevant to an understanding of race and culture in the context of present-day American society. The course is intended for juniors and seniors with some background in philosophy, and it will consist of a weekly three-hour seminar in which students will have an opportunity to present material and to discuss issues in depth. Students will write a short paper each week on the readings for the next session and a final paper of 12-15 pages. This course satisfies the American Cultures requirement. Ginsborg

114. History of Political Philosophy. (4) Three hours of lecture and one hour of discussion per week. Prerequisites: Any course in Philosophy of Mathematics, or one course in the history of major political philosophers, including some or all of Plato, Aristotle, Hobbes, Locke, Rousseau, Kant, Bentham, Mill, and Marx. (F,SP) Kolodny

115. Political Philosophy. (4) Three hours of lecture per week. An introduction to some of the major obligation and related problems. (F) Scheffler, Sluga

116. Special Topics in Political Philosophy. (4) Three hours of lecture per week. Prerequisites: 115 or equivalent. This course is designed to deal with a variety of topics in political philosophy. Its contents will vary from occasion to occasion. Possible topics include: problems in liberal theory; justice, desert, and responsibility; communitarianism, nationalism, and cosmopolitanism. Scheffler

122. Theory of Knowledge. (4) Three hours of lecture and one hour of discussion per week. Stroud

125. Metaphysics. (4) Three hours of lecture per week.

128. Philosophy of Science. (4) Three hours of lecture per week. An introduction to main topics in the philosophy of science and of other issues coming under the general heading of philosophy of science.

129. Special Topics in the Philosophy of Science. (4) Three hours of lecture per week. A discussion in some depth of one or a few special issues in, or approaches to, the philosophy of science. Details of current topics are available in the departmental guide of each semester in which the course is given.

130. Philosophy of Social Science. (4) Three hours of lecture per week. Philosophical topics arising from psychology, economics, sociology, etc. Searle

132. Philosophy of Mind. (4) Three hours of lecture per week. Mind and matter; other minds; the concept of "person." (F,SP) Searle

132C. Philosophy of Mind. (4) Three hours of lecture per week. Mind and matter; other minds; the concept of "person." Also listed as Letters and Science C160T. (F,SP) Searle

133. Philosophy of Language. (4) Three hours of lecture per week. (F,SP) Searle

135. Theory of Meaning. (4) Three hours of lecture per week.

136. Philosophy of Perception. (4) Three hours of lecture per week. Prerequisites: One previous course in philosophy is recommended. The philosophy of perception is a microcosm of the metaphysics of mind. Its central problems—What is perception? What is the nature of perceptual consciousness? How can one fit an account of the perceptual experience into a broader account of the nature of the mind and the world—are problems at the heart of metaphysics. It is often justifiably said that the theory of perception (and especially vision) is the area of philosophy of science that has made the greatest progress in recent years. Despite this progress, or perhaps because of it, philosophical problems about perception retain a great urgency, both for philosophy and for science. (F,SP) Nove

138. Philosophy of Society. (4) Three hours of lecture and one hour of discussion per week. This course deals with the ontology of society and thus provides a foundation for the social sciences. The main questions discussed are: 1) What is the mode of existence of social reality? 2) How does it relate to psychological and physical reality? 3) What implications does social ontology have for social explanations? (F,SP) Searle

138C. Philosophy of Society. (4) Three hours of lecture and one hour of discussion per week. This course deals with the ontology of society and thus provides a foundation for the social sciences. The main questions discussed are: 1) What is the mode of existence of social reality? 2) How does it relate to psychological and physical reality? 3) What implications does social ontology have for social explanations? Also listed as Letters and Science C160U. (F,SP) Searle

140A. Intermediate Logic. (4) Three hours of lecture per week. Major concepts, results, and techniques of modern logic. Basic set theoretic tools. Model theoretic treatment of propositional and first-order logic (completeness, compactness, Lowenheim-Skolem). Philosophical implications of these results. (F,SP) Mancosu

140B. Intermediate Logic. (4) Three hours of lecture per week. Prerequisites: 140A or equivalent. Major concepts, results, and techniques of modern logic. Turing machines, computability theory, undecidability of first-order logic, provability theory, Godel's first and second incompleteness theorems. Philosophical implications of these results. (F,SP) Mancosu

142. Philosophical Logic. (4) Three hours of lecture per week. The course aims at introducing students to the basic topics in philosophy of logic. Among the topics to be treated are the notions of proof and truth functionality, quantification, and necessity. (F,SP) Staff


148. Probability and Induction. (4) Three hours of lecture per week. Different approaches to the foundations of probability; inductive confirmation of scientific theories. Mancosu

149. Special Topics in Philosophy of Logic and Mathematics. (4) Three hours of lecture per week. This course is conceived in analogy with Philosophy 129 (Special Topics in Philosophy of Science). It is supposed to allow the class to focus on more specific problems in philosophy of logic or mathematics than can be treated in a broad introductory course such as Philosophy of Mathematics (Philosophy 129). The philosophy of logic (Philosophy 142). (F,SP) Staff

153. Chinese Philosophy. (4) Three hours of lecture per week. The course focuses on certain central topics in Chinese philosophy, though a survey of the history of Chinese thought is also included. The topics covered may vary from year to year, and may include: the Confucian ethical tradition; classical Chinese philosophy; a comparative study of Confucianism, Taoism and Buddhism. Shun
156A. Foundations of Analytic Philosophy: Frege. (F) Three hours of lecture and one hour of discussion per week. The work of Gottlob Frege with special emphasis on his contributions to logic, the philosophy of mathematics, and the philosophy of language. (F,SP) Sluga

156B. Foundations of Analytic Philosophy: Russell. (F) Three hours of lecture and one hour of discussion per week. The philosophical work of Bertrand Russell from the crucial period from 1890 to 1918. Special attention to G.E. Moore’s contribution to the development of Russell's thought and that of analytic philosophy as a whole. (F,SP) Sluga

160. Plato. (F) Three hours of lecture per week.

161. Aristotle. (F) Three hours of lecture per week. (F,SP) Code

C167. Introduction to Chinese Philosophy. (F) Three hours of lecture per week. Formerly Oriental Languages 167. A survey of the history of Chinese philosophy from late Chou times through the Ch’ing dynasty. Treated in some depth are a number of major Chinese thinkers including Confucius, Mencius, Hsun Tsu, Mo Tsu, Chuang Tsu, Tung Chung-shu, Chu Hsi, Wang Yang-ming, and Tai Chen. One of the major themes presented in the course is the development of Chinese ethical theory and the role of language in moral education. Also listed as Chinese C185. (F)

170. Descartes. (F) Three hours of lecture per week. Broughton

174. Locke. (F) Three hours of lecture per week. Ginsborg

176. Hume. (F) Three hours of lecture per week. (F,SP) Broughton

183. Schopenhauer and Nietzsche. (F) Three hours of lecture per week. An examination of the philosophy of Schopenhauer and Nietzsche. Sluga

184. Nietzsche. (F) Three hours of lecture per week. Sluga

185. Heidegger. (F) Three hours of lecture and one hour of discussion per week. An examination of Heidegger’s Being and Time. Dreyfus

186A. Early Wittgenstein. (F) Three hours of lecture and one hour of discussion per week. Formerly 187. A study of Wittgenstein’s philosophical work in the years 1913 to 1934. (F,SP) Sluga

186B. Later Wittgenstein. (F) Three hours of lecture and one hour of discussion per week. A close reading and extended discussion of central parts of Wittgenstein’s Philosophical Investigations. (F,SP) Stroud

187. Special Topics in the History of Philosophy. (F) Course may be repeated for credit. Three hours of lecture per week. The course’s specific content will vary from time to time. The course is designed to deal with a variety of topics in recent European philosophy. Its content will vary from occasion to occasion. Possible topics include further work in phenomenology and existentialism; the study of a particular philosopher by an important figure in contemporary European philosophy, current French and German philosophy. (F,SP)

188. Phenomenology. (F) Three hours of lecture per week. Formerly 188. Backgrounds of phenomenology and existentialism. Husserl and Merleau-Ponty. (F,SP)

189. Special Topics in Recent European Philosophy. (F) Course may be repeated for credit. Three hours of lecture per week. The course is designed to deal with a variety of topics in recent European philosophy. Its content will vary from occasion to occasion. Possible topics include further work in phenomenology and existentialism, the study of a particular philosopher by an important figure in contemporary European philosophy, current French and German philosophy. (F,SP)

H195. Philosophy Tutorial. (F) Three hours of tutorial per week. Prerequisites: Students in Honors Program. The department will designate a tutor, under whose guidance the student will seek to satisfy the thesis requirement of the Honors Program. (F,SP)

198. Group Study. (1-4) Course may be repeated for credit. Enrollment is restricted; see the Introduction to Courses and Curricula section of this catalog. Tutorial. One unit per week; two hours of instruction. Course may be taken on a passed/not passed basis. Prerequisites: Consent of instructor. Directed study on special topics. (F,SP)

199. Supervised Independent Study and Research. (1-4) Course may be repeated for credit. Tutorial. One unit per week; one hour of instruction. Must be taken on a passed/not passed basis. Enrollment restrictions apply; see the Introduction to Courses and Curricula section in this catalog. (F,SP)

Graduate Courses

200. First-Year Graduate Seminar. (3) Course may be repeated for credit. Two hours of seminar per week. Must be taken on a satisfactory/unsatisfactory basis. A combination seminar and tutorial, required of and limited to first year graduate students in philosophy. (F)

204. Foundations of Ethics/Recent Work in Ethics. (3) Course may be repeated for credit. Three hours of lecture per week. Prerequisites: Consent of instructor. An advanced investigation of fundamental questions about the nature of morality. Scheffler

Special Courses

250. Special Studies. (1-9) Course may be repeated for credit. Tutorial. Prerequisites: Admission to candidacy for the doctoral degree. (F,SP)

251. Directed Studies. (1-9) Course may be repeated for credit. Tutorial. Prerequisites: Consent of instructor. Open to qualified students wishing to pursue special study or research under the direction of a member of the staff. (F,SP)

290. Seminar. (3) Course may be repeated for credit. Two hours of seminar per week. Advanced study in various fields of philosophy. Topics will vary from semester to semester. (F,SP)

295. Dissertation Seminar. (2) Course may be repeated for credit. Two hours of seminar per week. Prerequisites: Restricted to graduate students who are writing dissertations in philosophy. Formerly 109. Presentations by graduate students of dissertation research in progress. (F,SP) Staff

602. Individual Study for Doctoral Students. (1-8) Course may be repeated for credit. Three hours of lecture per week. Course does not satisfy unit or residence requirements for doctoral degree. Independent study. Must be taken on a satisfactory/unsatisfactory basis. Prerequisites: Consent of instructor. (F,SP) Staff

603. Independent Philosophical Studies. (1-4) Course may be repeated for credit. Course does not satisfy unit or residence requirements for doctoral degree. Independent study. Must be taken on a satisfactory/unsatisfactory basis. Prerequisites: Restricted to graduate students who are writing dissertations in philosophy. (F,SP) Sluga

605. Independent Philosophical Studies: Philosophy of Science. (1-4) Course may be repeated for credit. Three hours of lecture per week. Course does not satisfy unit or residence requirements for doctoral degree. Independent study. Must be taken on a satisfactory/unsatisfactory basis. Prerequisites: Restricted to graduate students who are writing dissertations in philosophy. (F,SP) Sluga

795. Independent Research. (1-9) Course may be repeated for credit. Three hours of tutorial per week. Prerequisites: Students in Honors Program. The department will designate a tutor, under whose direction the student will seek to satisfy the thesis requirement of the Honors Program. (F,SP)

Physical Education

(Physical Education / 411)

Physical Education

Office: 200 Hearst Gymnasium, (510) 642-3289 pe.berkeley.edu
Director: M. Kathryn Scott, M.A.
Supervisor of Physical Education M. Kathryn Scott, M.A.
Kyoung Min, M.Ed., Ph.D. (hon. [life]) (Emeritus)

Lecturers
Russell Ahn, Ph.D.
Jason Britton, M.F.A., M.A.
Justin Caraway, M.A.
Sue Johannessen, M.A.
Edward Lee, Ed.D.
Suzanna Li-Jue, M.F.A.
Toni Mar, M.S.
Richard Morris, M.S.
Lon Rork, B.A.
Elmar Stalter, M.A.
Dini Wong, M.A.

Diving Safety Officer
Jim Hayward, B.A.

Program Overview

The Physical Education Program is under the jurisdiction of the College of Letters and Science and reports to the college through the Dean of Biological Sciences. The program consists of a wide range of physical activity classes as well as various lecture/labatory courses described in the course listings. The physical activity offerings are designed to provide structured instruction in such classes as aquatic activities, combatives, and sports. Instruction is planned to enable participants to develop and improve performance skills, gain knowledge and concepts relevant to the activity, receive relevant information concerning the health benefits of regular exercise, and attain an appropriate level of fitness. All activity classes are for credit and are open to women and men. Students should consult the online Schedule of Classes for specific information regarding each semester’s offerings.

Scientific Diving, The Division of Diving Safety ensures that all underwater diving conducted under the auspices of the University of California, Berkeley is done in accordance with the standards and policies established by the American Academy of Underwater Sciences and the Berkeley campus. The program is administered by the diving safety officer in association with the vice chancellor for research, Environmental Health and Safety, the Physical Education Program, the College of Natural Resources, and the Richard Gump South Pacific Biological Research Station. A University scientific diver permit is required for anyone diving for scientific, research, University equipment, diving from University-owned property, or diving as a student or employee of the University. The Diving Safety Program provides opportunities for students, faculty, and staff to pursue SCUBA certification or a scientific diver permit. There are fees associated with these services. Further information can be found at pe.berkeley.edu/scubadiving.

Locker Room Regulations and Penalties. A fine is imposed if students fail to comply with the following regulations: a) clear locker by the specified date; b) return equipment or clothing on or before the date posted for such return at the end of each semester; and c) overnight use of locker in designated areas.

Fees. A course material fee is assessed from every student enrolled in a physical education activity class. The fees are listed by class in the online Schedule of Classes.

Lower Division Courses

1. Physical Education Activities. (5) Course may be repeated for credit. Two hours of laboratory per week.
Instruction in a variety of sports, exercise, and conditioning activities is offered at the elementary level. Students select activity by section and time preferences. Students should consult the Schedule of Classes each semester to determine the particular activities available. (F,SP) Staff

2. Physical Education Activities. (5) Course may be repeated for credit. Two hours of laboratory per week. Instruction in a variety of sports, exercise, and conditioning activities is offered at the elementary level. Students select activity by section and time preferences. Students should consult the Schedule of Classes each semester to determine the particular activities available. (F,SP) Staff

3. Physical Education Activities. (5) Course may be repeated for credit. Two hours of laboratory per week. Instruction in a variety of sports, exercise, and conditioning activities is offered at the intermediate level. Students select activity by section and time preferences. Students should consult the Schedule of Classes each semester to determine the particular activities available. (F,SP) Staff

4. Physical Education Activities. (5) Course may be repeated for credit. Two hours of laboratory per week. Instruction in a variety of sports, exercise, and conditioning activities is offered at the advanced level. Students select activity by section and time preferences. Students should consult the Schedule of Classes each semester to determine the particular activities available. (F,SP) Staff

5. Physical Education Activities. (5) Course may be repeated for credit. Two hours of laboratory per week. Instruction in a variety of sports, exercise, and conditioning activities is offered at the intermediate level. Students select activity by section and time preferences. Students should consult the Schedule of Classes each semester to determine the particular activities available. (F,SP) Staff

6. Physical Education Activities. (5) Course may be repeated for credit. Two hours of laboratory per week. Formerly 6. Variety of intercollegiate sports for men. Students select activity by section and time preferences. Students should consult the Schedule of Classes each semester to determine the particular activities available. (F,SP) Staff

7. Physical Education Activities. (5) Course may be repeated for credit. Two hours of laboratory per week. Formerly 7. Variety of intercollegiate sports for women. Students select activity by section and time preferences. Students should consult the Schedule of Classes each semester to determine the particular activities available. (F,SP) Staff

11. Physical Education Activities. (5) Course may be repeated for credit. Two hours of laboratory per week. Formerly 6. Variety of intercollegiate sports for men. Students select activity by section and time preferences. Students should consult the Schedule of Classes each semester to determine the particular activities available. (F,SP) Staff

12. Physical Education Activities. (5) Course may be repeated for credit. Two hours of laboratory per week. Formerly 7. Variety of intercollegiate sports for women. Students select activity by section and time preferences. Students should consult the Schedule of Classes each semester to determine the particular activities available. (F,SP) Staff

32. Fitness for Life: Physical Adaptations to Exercise. (3) Two hours of lecture and three hours of laboratory per week. Develops the relationship between physical fitness and wellness through scientific evidence presented in the areas of exercise physiology and health. The body’s adaptation to programs of aerobic conditioning and strength training are examined. Areas associated with health and fitness, including nutrition and weight control, maintaining fitness with age, heart disease, low back care, and stress reduction are discussed. The laboratory will provide students with opportunities to assess their own fitness and health. (F,SP) Johannessen

47. Introduction to Scuba Diving. (3) Two hours of lecture and two hours of laboratory per week. Prerequisites: Complete medical and swimming evaluation. Designed to introduce non-divers to scuba diving as a future tool for research. The course will cover topics related to working in the marine environment, including diving physiology, dive equipment, diving safety, dive planning, and emergency preparedness. Students will be introduced to the skills needed to work efficiently under water. (F,SP) Hayward

50. Emergency First Aid and Sports-Related Injuries. (2) One hour lecture and two hours of laboratory per week. Must be taken on a passed/not passed basis. Intensive course in first aid. Upon successful completion of the course and the additional requirements of the American Red Cross, an appropriate certificate may be issued. Scott

55. Water Safety Instructor Training. (2) Two hours of lecture and two hours of laboratory per week. Prerequisites: 3 (Aquatics) or equivalent; preliminary skills test. The objective of the course is to provide students with the knowledge and skills needed to teach swimming and water safety classes in accordance with standards established by the American National Red Cross. Students will also be trained to carry out this objective. These include lectures, discussions, readings, audio-visual presentations and analyses, in-pool teaching and practice sessions. Students will study the techniques of various swimming strokes and life-saving techniques, learn the proper methods and progressions of teaching individuals of all ages and abilities, and examine methods for evaluating and improving an individual’s performance. Upon successful completion of the course and the additional requirements of the American Red Cross, an appropriate certificate may be issued. (SP) Steke

60. Cultural Sources of Dance, Rhythm, and Movement. (3) Two hours of lecture and two hours of laboratory per week. This course examines the many roles that dance plays in various cultures around the world. Students will explore dance with respect to folklore, religion, sociology, geography, body types, and lifestyles. Barnes, death, marriage, war, harvest, religion, and pleasure will be dissected, discussed, and related back to society. The course material will also bring focus to ideas pertaining to American culture and the use of the body in contemporary society. Bi-weekly laboratory will focus on how humans dance, and why certain rhythms and movements are inherent to each culture. In conjunction with lectures will be a two-hour laboratory where students will perform sets of rhythms, and sounds of the world. No prior dance experience needed. (SP) Li-Jue

64. Cultural, Historical, Philosophical, and Social Impact of Martial Arts. (2) Two hours of lecture per week. This course is designed for students to learn historical and cultural context in which martial arts have emerged; how they have been influenced by historical, philosophical, cultural, social, political, and educational developments; what functions they once performed; and the place they hold in contemporary societies. Recent research will be studied regarding the physiological and psychological dimensions of martial arts and their contribution to physical and mental health. An essential component of such martial arts as Judo and Taekwondo is the development of strong moral and ethical values. Students will study why and how these are developed and how to use this information in bettering their own lives. (SP) Ahn, Min

98. Supervised Group Study. (1-4) Course may be repeated for credit. One to four hours of directed group study per week. Must be taken on a passed/not passed basis. Prerequisites: Restricted to freshmen and sophomores with consent of instructor. Supervised studies by lower division students. Enrollment is restricted by regulations listed in the General Catalog. (F,SP) Staff

140. Introduction to Scientific Diving. (3) Two hours of lecture and three hours of laboratory per week. Prerequisites: Advanced scuba certification, swimming, medical exam, and the consent of instructor. Diving physics, physiology, medicine, rescue, decompression, theory, navigation, environment, marine life, research methods, equipment, and University regulations. Course leads to University certification to use underwater life support apparatus for study or research under University auspices. Also listed as Integrative Biology C407. (SP) Staff

Physical Science

College of Letters and Science

Department Office: 366 LeConte Hall
ls.berkeley.edu/phy9

Major Advising: 368 LeConte Hall, (510) 642-0481

Field Major in Physical Sciences

This program has been developed for students who wish to concentrate on the physical sciences on a broader basis than is possible in a departmental major. Two plans are offered within the major. Plan A is based on Physics 8, which is required of all science students, and Mathematics 16, which is required in part by life sciences departments. Through this plan a student preparing for a career in environmental or health science can major in physical science and at the same time acquire the necessary pre-professional preparation. For example, Plan A, together with organic chemistry and a year of biology, will meet the entrance requirements of most medical schools. Plan B is based on Physics 7 and Mathematics 1, which are required by physical science and engineering departments. Within this plan it is possible to complete much of the departmental major in, for example, one year of foreign language, while also studying astronomy and geology as well as computer science. For more information about the major and department, go to physics.berkeley.edu.
Lower Division Courses. Mathematics 16A-16B, 55; Physics 8A-8B. Chemistry 1A-1B; Computer Science 3.

Upper Division Courses. Physics 123; Chemistry 130A-130B; Vision Science 203A (formerly Vision Science 101); Statistics 131. Electives in physical sciences, mathematics, and statistics, with the approval of the adviser to complete a total of 30 upper-division units in the major. Up to 8 upper-division units in engineering and/or computer science will be accepted with the approval of the major adviser.

Plan B (Option of departmental concentration)
Lower Division Courses. Mathematics 1A-1B, 53, 54; Physics 7A-7B-7C; Chemistry 1A-1B or 4A-4B.

Additional Required Courses. EPS 50/50L or EPS 100A or Astronomy 7A, 7B, 149, or 159.

Upper Division Courses. Two of the three courses Physics 105, 110A, or 137A, Chemistry 120A or (for accepted with the approval of the major adviser.

Division units in the major. Up to 8 upper-division units in engineering and/or computer science will be accepted with the approval of the major adviser.

Honors Program. Students with a grade-point average both overall and in the major of at least 3.3 may wish to participate in an honors program leading to graduation with honors. The honors program will include two semesters of work in a departmental honors program with a senior thesis.

Physical and infrared astrophysics

Robert J. Birgeneau, Ph.D. Yale University. Experimental condensed-matter physics

Marvin L. Cohen, Ph.D. University of Chicago. Theoretical high energy particle physics

Department Office: 366 LeConte Hall, (510) 642-7166

Robert G. Jacobsen, Ph.D. Stanford University.

Department of Physics (College of Letters and Science)

†Robert G. Jacobsen, Ph.D. Stanford University.

Roger W. Falcone, Ph.D. Stanford University. Quantum condensed-matter physics

†John Clarke, Ph.D. University of Cambridge. Elementary particle physics

Honors Program. Students with an overall grade-point average of 3.0 or higher in the major may be admitted to the honors program. A major adviser should be consulted before the student’s last year of residence. This program requires completion of the major, at least one semester of Physics 141A and 141B, at the conclusion of the major.

The Major

The physics major is designed to give the student a broad and thorough understanding of the fundamentals of physics. The emphasis is, therefore, on courses leading to an understanding rather than on specializations, although some specializations are among the options open to the student. Those considering a physics major are urged to consult a departmental adviser early, in order to discuss the content of the major and also the opportunities after graduation. Recent graduates have entered graduate work in a number of scientific fields, and many have gone on to work in industry, government laboratories. For information about the major and department, go to physics.berkeley.edu.

Lower Division Courses. Physics 7A-7B-7C (regular or honors, although honors are recommended for students with suitable preparation). Theoretical high energy particle physics

Theoretical condensed-matter physics

Theoretical high energy particle physics

Lower Division Courses. Mathematics 104, 121A-121B, 185 is required for admission to the major program is usually required for admission to graduate work. Additional mathematics are urged to include an introductory course in Computer Science.

Upper Division Courses. Courses 7A-7B-7C (regular or honors) and differential and integral calculus are prerequisite to all upper division courses except Physics 132. Upper division courses may have significant overlap and to be familiar with a computer programming language are urged to include an introductory course in Computer Science.

Instructors, continue to graduate school.

Special programs may be worked out in consultation with the adviser. Completion of a physics major program is usually required for admission to graduate work. Additional mathematics are among those courses Mathematics 104, 121A-121B, 185 is recommended. Competence in the use of computers is desirable.

Honors Program. Students with an overall grade-point average of 3.0 or higher in the major may be admitted to the honors program. A major adviser should be consulted before the student’s last year of residence. This program requires completion of the major, at least one semester of Physics 141A and 141B, at the conclusion of the major.

Biophysics. Students who wish to obtain a broad introduction to the major topics in the field of physics and their application to biology are referred to the Department of Physics and the Department of Molecular and Cell Biology. There is no biophysics undergraduate degree program.

Engineering Physics. The College of Engineering, with the cooperation of the Department of Physics, offers a curriculum in engineering physics leading to the degree of Bachelor of Science. (The

Student with an overall grade-point average of 3.0 or higher in the major may be admitted to the honors program. A major adviser should be consulted before the student’s last year of residence. This program requires completion of the major, at least one semester of Physics 141A and 141B, at the conclusion of the major.

Biophysics. Students who wish to obtain a broad introduction to the major topics in the field of physics and their application to biology are referred to the Department of Physics and the Department of Molecular and Cell Biology. There is no biophysics undergraduate degree program.

Engineering Physics. The College of Engineering, with the cooperation of the Department of Physics, offers a curriculum in engineering physics leading to the degree of Bachelor of Science. (The

Student with an overall grade-point average of 3.0 or higher in the major may be admitted to the honors program. A major adviser should be consulted before the student’s last year of residence. This program requires completion of the major, at least one semester of Physics 141A and 141B, at the conclusion of the major.

Biophysics. Students who wish to obtain a broad introduction to the major topics in the field of physics and their application to biology are referred to the Department of Physics and the Department of Molecular and Cell Biology. There is no biophysics undergraduate degree program.

Engineering Physics. The College of Engineering, with the cooperation of the Department of Physics, offers a curriculum in engineering physics leading to the degree of Bachelor of Science. (The

Student with an overall grade-point average of 3.0 or higher in the major may be admitted to the honors program. A major adviser should be consulted before the student’s last year of residence. This program requires completion of the major, at least one semester of Physics 141A and 141B, at the conclusion of the major.

Biophysics. Students who wish to obtain a broad introduction to the major topics in the field of physics and their application to biology are referred to the Department of Physics and the Department of Molecular and Cell Biology. There is no biophysics undergraduate degree program.
Course requirements for the Ph.D. include the following courses: Physics 209 (Classical Electromagnetism), Physics 211 (Equilibrium Statistical Physics), and Physics 216 (Quantum Mechanics) plus 19 units (five semester courses) of material selected from upper division or graduate courses (not including any upper division material required for the undergraduate major), of which at least 11 units must be in the 200 series courses. Some of the 19 units could include courses in mathematics, biophysics, or astrophysics. Consult departmental offices for recommendations. Physics 251, 290, 295, 299, 300, and 602 are excluded from the 19 units considered above. Physics 209, 211, and 221A-221B must be completed for letter grades (averaging at least a B). No more than one-third of the Ph.D. major requirements may be satisfied by courses graded Satisfactory, and then only with approval from the department.

The master’s degree is administered according to regulations given in the Graduate Division section of this catalog. The Department of Physics requires a comprehensive examination rather than a thesis; passing the preliminary exams constitutes passing the comprehensive exam. The candidate must complete 35 semester units of upper division and graduate work in physics (or related fields) with an average grade of at least a B. Eighteen of these units must represent graduate courses in physics. Neither upper division courses included in the department’s major requirements nor courses in the graduate program may be used to satisfy the 35-unit requirement. No more than one-third of the master’s program may be fulfilled by courses completed for the undergraduate major, and only if approved by the department. M.A. petitions are due the fifth week of fall and spring semesters.

Lower Division Courses

Courses 7A-7B-7C or H7A-H7B-H7C are fundamental and are designed to meet the needs of students majoring in any of the physical sciences or who are enrolled in the College of Chemistry or the College of Engineering. Students proceeding with a secondary-year mathematics sequence should take courses 53-54 concurrently with Physics 7B-7C, respectively. Physics 8A-8B is designed for premedical students in architecture, and students in the biological sciences. Physics 10 is recommended for the nonscience major who wishes to gain some understanding of basic physical concepts. The material in Physics 7B-7C is particularly useful preparation for upper division study in biology and architecture.

Graduate Programs

Graduate work leading to the M.A. and Ph.D. degrees is offered in the Department of Physics with emphasis placed on the Ph.D. Please note that the department encourages applications from students who intend to work toward the M.A. degree only. In addition to applications and transcripts of undergraduate work, applicants for admission must submit scores of the General and Physics Graduate Record Examination tests. For detailed information concerning the physics graduate program, including admissions, go to www.physics.berkeley.edu/admissions, or contact the Graduate Student Services office in 368 LeConte Hall. (510) 642-0596.

Research is a major part of the Ph.D. program, and the department offers opportunities in a wide variety of experimental and theoretical fields. Campus research includes atomic physics and spectroscopy, astrophysics, biophysics, cosmic rays, mass spectrometry, nonlinear optics, condensed matter physics, and statistical mechanics. At the Lawrence Berkeley National Laboratory, extensive opportunities exist in fields of astrophysics, elementary particle and nuclear physics, condensed matter physics and materials science, and plasma and nuclear physics. Space physics, interplanetary studies, studies of light from the universe, electricity, magnetism, and atmospheric problems are pursued both in the Physics Department and at the Space Sciences Laboratory.

Performance in previous courses in a standard sequence. (F.S.P) Staff
39. Lower Division Physics Seminar. (1.5-4) Course may be repeated for credit. One and one-half to four hours of seminar per week; Sections 1-2 to be graded on a passed/not passed basis. Sections 3-4 to be taken on a passed/not passed basis. Prerequisites: Enrollment by consent of instructor during the week of pre-enrollment. Consult bulletin boards outside 366 Le Conte for more information. Enrollment limited to 20 students per week. Physics seminar course designed for four-hour per week for non major students and students considering a major in physics. Topics vary from semester to semester. (F,SP) Staff

40. Supplementary Work in Lower Division Physics. (1-3) Course may be repeated for credit. Meetings to be arranged. Students with partial credit in lower division physics courses may, with consent of instructor, complete the credit under this heading. (F,SP) Staff

84. Sophomore Seminar. (1.2) Course may be repeated for credit as topic varies. One hour of seminar per week for 15 weeks. One and one-half hours of seminar per week per unit for 10 weeks. Two hours of seminar per week per unit for eight weeks. Three hours of seminar per week per unit for five weeks. Sections 1-2 to be graded on a passed/not passed basis. Sections 3-4 to be graded on a letter-grade basis. Prerequisites: At discretion of instructor. Sophomore seminars are small interactive courses offered by faculty members in departments all across the campus. Sophomore seminars offer opportunity for close and informal contact between faculty members and students in the crucial second year. The topics vary from department to department and semester to semester. Enrollment limited to 15 sophomores. (F,SP)

98. Directed Group Study. (1-4) Course may be repeated for credit as topic varies. Enrollment is restricted; see the Introduction to Courses and Curriculum section of this catalog. One to four hours of directed group study per week. Must be taken on a passed/not passed basis. Prerequisites: Restricted to freshmen and sophomores only; consent of instructor. (F,SP)

99. Supervised Independent Study. (1-4) Course may be repeated for credit as topic varies. Enrollment is restricted; see the Introduction to Courses and Curriculum section of this catalog. One to four hours of independent study per week. Must be taken on a passed/not passed basis. Prerequisites: Restricted to freshmen and sophomores only; consent of instructor. (F,SP)

Upper Division Courses

100. Communicating Physics and Physical Science. (2) Two hours of lecture/fieldwork per week. For undergraduate and graduate students interested in improving their ability to communicate scientific knowledge by teaching science in K-12 schools. The course will offer instruction in inquiry-based science teaching methods and learning pedagogy with 10 weeks of supervised teaching experience in a local school. Students will practice, with support and mentoring, communicating scientific knowledge through presentations and hands-on activities. Approximately three hours per week including time spent in school classrooms. (SP) Staff

105. Analytic Mechanics. (4) Three hours of lecture and one hour of discussion per week. Newtonian mechanics in one, two, and three dimensions, Lagrange’s equations, Hamilton’s equations, central force motion, moving coordinate systems, mechanics of continuous media, oscillations, normal modes, rigid body dynamics, tensor analysis techniques. (F,SP) Staff

110A-110B. Electromagnetism and Optics. (4-4) Three hours of lecture and one hour of discussion per week. A course emphasizing electromagnetic theory and applications; charges and currents; electric and magnetic fields; dielectric, conducting, and magnetic materials; special relativity; wave propagation in media, radiation and scattering, Fourier optics, interference and diffraction, ray optics and applications. (F,SP) Staff

111. Modern Physics and Advanced Electrical Laboratory. (1.3) Course may be repeated for a maximum of 9 units. Six units required for physics major; nine units may be required for physics minor. Students may be required to complete in one semester. Eight hours of laboratory per week. Prerequisites: 137A or consent of instructor. The first semester (3 units), on Basic Semiconductor Circuits (BSC), covers introductory analog and astrophysical Fourier interferom lab sessions, and a 1-1/2 hour weekly lecture. In the second semester, Advanced Lab (3 units), students complete 4 of 20+ advanced experiments. These include many in atomic, nuclear, classical, and solid-state physics, among others. Students may, with approval, enroll in an optional third semester for variable units. (F,SP) Staff

112. Introduction to Statistical and Thermal Physics. (4) Three hours of lecture and one hour of discussion per week. Basic concepts of statistical mechanics, microscopic basis of thermodynamics and applications to macroscopic systems, condensed states, phase transformations, quantum distributions, elementary particle theory of transport processes, fluctuation phenomena. (F,SP) Staff

129. Particle Physics. (4) Three hours of lecture and one hour of discussion per week. Prerequisites: 137A. 137B (may be taken concurrently), or consent of instructor. Formerly 129A. Tools of particle and nuclear physics. Properties, classification, and interaction of elementary particles and their constituents, and fundamental symmetries of hadrons. High energy phenomena analyzed by quantum mechanical methods. Course will survey the field including some related topics in nuclear physics. (F)

132. Contemporary Physics. (3) Not open for credit to students who have completed 137A. Three hours of lecture and one hour of discussion per week. Prerequisites: 8A-8B or equivalent or consent of instructor. A general descriptive course of selected topics in contemporary physics. Subject matter will vary and may include topics such as general relativity, atomic and nuclear physics, radiation, fundamental particles and their symmetries, superconductivity and superfluidity, solid state physics, astrophysics, and cosmology. (SP) Staff

137A-137B. Quantum Mechanics. (4.4) Three hours of lecture and one hour of discussion per week. An introduction to the methods of quantum mechanics with applications to atomic, molecular, solid state, nuclear and elementary particle physics. (F,SP) Staff

138. Modern Atomic Physics. (3) Three hours of lecture and one hour of discussion per week. Prerequisites: 137A-137B. This course has two goals: 1) The description of wave properties of atomic and nuclear energy levels based on the central field approach. The ideas developed in this description are widely used in solid state, particle and nuclear physics. 2) The description of atomic and molecular methods in atomic physics and some of the important physics obtained from them. Examples are magnetic resonance, lasers and masers, ion and neutral atom traps, optical pumping and beam foil spectroscopy. (SP) Staff

139. Special Relativity and General Relativity. (3) Three hours of lecture and one hour of discussion per week. Prerequisites: 105, 110A or consent of instructor. Historical and experimental foundations of Einstein’s special theory of relativity; spatial and temporal measurements, particle dynamics, electrodynamics, Lorentz covariance in general relativity. Selected applications. Designed for advanced undergraduates in physics and astronomy. (SP) Staff

141A-141B. Solid State Physics. (4.3) Three hours of lecture and one hour of discussion per week. Prerequisites: 137A-137B; 137B may be taken concurrently. An introductory course in modern solid state physics. Crystal symmetries; classification of solids and their bonding; electromagnetic, elastic, and particle waves in periodic lattices; thermal magnetic and electrical properties, energy bands of metals and semi-conductors; superconductivity; magnetism; ferroelectricity; magnetic resonances. (F,SP) Staff

142. Introduction to Plasma Physics. (4) Three hours of lecture and one hour of discussion per week. Prerequisites: 105, 110A-110B (110B may be taken concurrently). Motion of charged particles in electric and magnetic fields, dynamics of fully ionized plasma from both microscopic and macroscopic point of view, magnetohydrodynamics, small amplitude waves; from astrophysics and engineering. (SP) Staff

151. Elective Physics: Special Topics. (3) Course may be repeated for credit as topic varies. Three hours of lecture and one hour of discussion per week. Prerequisites: Consent of instructor. Topics vary from semester to semester. The subject matter level and sophistication of the course are intended to be acceptable as the required elective course in the Physics major. See Department of Physics course announcements. (F,SP) Staff

C161. Relativistic Astrophysics and Cosmology. (4) Three hours of lecture and one hour of discussion per week. Prerequisites: Consent of instructor. Will review the structure of proteins, nucleic acids, carbohydrates, lipids, and the forces and interactions maintaining their structure in solution. We will describe the thermodynamics and kinetics of protein folding. The principles of polymer chain statistics and of helix-coil transitions in biopolymers will be reviewed next, together with biopolymer dynamics. We will then cover the main structural methods in biology: X-ray crystallography, NMR and fluorescence spectroscopy, electron and probe microscopy, and single molecular methods. (SP) Bumstanzare

H190. Physics Honors Course. (2) Course may be repeated for credit. May be taken on a passed/not passed basis. A seminar which includes study and reports on current theoretical and experimental problems. Open to all students. (F) Staff

C191. Quantum Information Science and Technology. (3) Three hours of lecture/discussion per week. Prerequisites: Mathematics 54, Physics 7A-7B, and either Physics 7C, Mathematics 55, or Computer Science 170. This multidisciplinary course provides an introduction to fundamental conceptual aspects of quantum mechanics from a computational and informational theoretic perspective, as well as physical implementations and technological applications of quantum information science. Basic sections of quantum algorithms, complexity, and cryptography, will be touched upon, as well as research in quantum and atomic scale science and engineering. Also listed as Chemistry C191 and Computer Science C191. (F,SP) Crommie, Vazirani, Whaley

H192A-H192B. Senior Honors Thesis Research. (2/2) Credit and grade to be awarded on completion of research. Prerequisites: Permission of the advisor and completion of the honors program. Thesis work under the supervision of a faculty member. To obtain credit the student must, at the end of two semesters, submit a satisfactory thesis. At least 8-10 units must be taken. The thesis may be distributed between one or two semesters in any way. (F,SP) Staff

198. Directed Group Study. (1-4) Course may be repeated for credit. Must be taken on a passed/not passed basis. Enrollment restrictions apply; see the Introduction to Courses and Curriculum section in this catalog. (F,SP) Staff

199. Supervised Independent Study. (1-3) Must be taken on a passed/not passed basis. Enrollment restrictions apply; see the Introduction to Courses and Curriculum section in this catalog. (F,SP) Staff

*Professor of the Graduate School
†Recipient of Distinguished Teaching Award
Graduate Courses

C201. Introduction to Nano-Science and Engineering. (1-4) Course may be repeated to complete different modules. Three hours of lecture and one hour of discussion per week. Prerequisites: Major in physical science such as chemistry, physics, etc., or engineering; consent of advisor or instructor. A four-module introduction to the fundamental topics of Nano-Science and Engineering (NSE) theory and research within chemistry, physics, biology, and engineering. This course covers topics such as quantum and solid-state physics; chemical synthesis, growth fabrication, and characterization techniques; structures and properties of semiconductors, polymer and biomaterials, nanowires, and nanoscale systems. Students may take either 3 or 4 units to satisfy the NSE Designated Emphasis requirement. Also listed as Materials Science and Engineering C261 and Nanoscale Science and Engineering C242. (F,SP) Staff

C203. Computational Nanoscience. (2) Two hours of lecture and one hour of discussion per week. Prerequisites: Major in physical science such as chemistry, physics, etc., or engineering; consent of advisor or instructor. A multidisciplinary overview of computational nanoscience for both theorists and experimentalists. This course teaches the main ideas behind different simulation methods; how to decompose a problem into “pieces” and how to simulate these pieces in a meaningful way; knowing what you are doing and why thinking is still important; the importance of talking to experimentalists; what to do with your data and how to visualize it for effective data visualization; and how to develop a fully working simulation. Three important varieties of computational nanosciences will be treated: classical mechanics, quantum mechanics, and coarse-grained models. (F) Staff

205A. Advanced Dynamics. (4) Three hours of lecture and one hour of discussion per week. Prerequisites: 10S or equivalent. Lagrange and Hamiltonian dynamics, variational methods, symmetry, kinematics and dynamics of rotation, canonical variables and transformations, perturbation theory, nonlinear dynamics, KAM theory. (F) Staff

205B. Advanced Dynamics. (4) Three hours of lecture and one hour of discussion per week. Prerequisites: 205A. Continuous systems, dissipative systems. Attractors. Emphasis on recent developments, including turbulence. (SP) Staff

208A. Introduction to Quantum Electronics and Nonlinear Optics. (4) Three hours of lecture and one hour of discussion per week. Prerequisites: 110A-110B and 137A-137B or their equivalents recommended. Semiclassical theories of emission and absorption, theory and operation of common laser systems, wave propagation in anisotropic and nonlinear media, nonlinear optical phenomena such as second-harmonic generation and parameter amplification. (F) Staff

208B. Introduction to Quantum Electronics and Nonlinear Optics. (4) Three hours of lecture and one hour of discussion per week. Prerequisites: 208A or consent of instructor. Various topics in nonlinear optics and coherent optical phenomena, such as stimulated Raman and Brillouin scatterings, self-focusing, photon echoes, self-induced transparency, two-photon absorption and high resolution spectroscoopy, multiphoton processes. (SP) Staff

209. Classical Electromagnetism. (5) Three hours of lecture and one hour of discussion per week. Prerequisites: 110A-110B or consent of instructor. Maxwell’s equations, gauge transformations and tensors. Complete development of special relativity, with applications. Plane waves in material media, polarization, Fresnel equations, attenuation, and dispersion. Wave equation with sources, retarded solution for potentials, and fields. Electromagnetic multipole expansions, vector spherical harmonics, examples of radiating systems, diffraction, and optical fields. Electromagnetics in arbitrary motion, radiated power, relativistic (synchrotron) radiation, and radiation in collisions. (F)

211. Equilibrium Statistical Physics. (4) Three hours of lecture and one hour of discussion per week. Prerequisites: 112 or equivalent. Foundations of statistical physics. Ensemble theory. Degenerate systems. Systems of interacting particles. (F) Staff

212. Nonequilibrium Statistical Physics. (4) Three hours of lecture and one hour of discussion per week. Prerequisites: 211 and 221A-221B, or equivalents. Time dependence of systems. Transport processes. Irreversibility. Theory of many-particle systems. Fluctuation phenomena. (SP) Staff

216. Special Topics in Many-Body Physics. (4) Three hours of lecture and one hour of discussion per week. Prerequisites: 221A-221B or equivalent recommended. Quantum Many-body Systems. Applications of theory and technique to physical systems. Pairing phenomena, superfluidity, equation of state, critical phenomena, phase transitions, nuclear and electronic matter. (SP) Staff

221A. Quantum Mechanics. (5) Three hours of lecture and one hour of discussion per week. Prerequisites: 137A-137B or equivalent. Basic assumptions of quantum mechanics; quantum theory of measurement; matrix mechanics; Schroedinger theory; symmetry and invariance principles; theory of angular momentum; stationary state problems; variational principles; time independent perturbation theory; time dependent perturbation theory; theory of scattering. (F) Staff

221B. Quantum Mechanics. (5) Three hours of lecture and one hour of discussion per week. Prerequisites: 221A. Many-body methods, radiation field quantization, relativistic quantum mechanics, applications. (SP) Staff

222. Special Topics in Mathematical Physics. (2-4) Course may be repeated for credit with consent of instructor. Three hours of lecture and one hour of discussion per week. Prerequisites: 209 or equivalent. Application of a branch of mathematics to physical problems. Topics to be announced by the department. Particular attention will be given to recent developments in methods and to the unifying mathematical ideas. (F) Staff

223. Applications of Group Theory in Modern Physics. (4) Course may be repeated for credit. Three hours of lecture and one hour of discussion per week. Prerequisites: 221A-221B or consent of instructor. Introduction to group theory as applied to problems in modern physics. The particular field of physics will vary from one offering to the next. (SP) Staff

226. Particle Physics Phenomenology. (4) Three hours of lecture and one hour of discussion per week. Prerequisites: 221A-221B or equivalent or consent of instructor. Recent topics in the high-energy community. Emphasis is placed on experimental tests of particle physics models. Topics include Quark model spectroscopy; weak decays; overview of detectors and accelerators; QCD and neutrino-nucleon scattering; special topics of current interest. (F) Staff

C228. Extragalactic Astronomy and Cosmology. (3) Three hours of lecture per week. A survey of experimental and theoretical research in extragalactic objects, quasars, and big-bang cosmologies. Also an introduction to the fundamental topics of Nano-Science and Engineering, KAM theory. (SP) Staff

250. Special Topics in Physics. (2-4) Course may be repeated for credit with consent of instructor. Three hours of lecture and one hour of discussion per week. Prerequisites: 209A or equivalent or consent of instructor. Advanced topics in statistical mechanics and exact results; solvable models of quantum field theory; supersymmetry, supergravity, and superstring. (F,SP) Staff

251. Introduction to Graduate Research in Physics. (3) Three hours of lecture and one hour of discussion per week. Prerequisites: 221A or consent of instructor. Introduction to research and current research areas. cosmic rays, particle accelerators; e+e-annihilation; parton model; electron-positron colliders; weak decays; overview of detectors and accelerators. (1)

252. Advanced Electromagnetism. (4) Three hours of lecture and one hour of discussion per week. Prerequisites: 228 and 231 or consent of instructor. Recent work in the areas of fundamental interactions. Rigorous kinetic theory. (SP) Staff

258. Statistical Mechanics. (3) Three hours of lecture per week. Study of the statistical basis of thermodynamic properties; canonical and grand canonical ensembles; partition function and thermodynamics. (SP) Staff

262. Introduction to Quantum Optics and Quantum Information. (4) Three hours of lecture and one hour of discussion per week. Prerequisites: 221A, 221B or their equivalents. Quantum information processing. Use of quantum mechanics in information processing. (1)

263. High Energy Physics. (4) Three hours of lecture per week. Prerequisites: 201 or consent of instructor. 202 recommended. Basic principles of high energy radiation processes in an astrophysics environment. Cosmic ray production and propagation. Applications selected from pulsars, x-ray sources, supernovae, interstellar medium, extragalactic radio sources, quasars, and big-bang cosmologies. Also
listed as Astronomy C254. (F) Arons, Boggs, Lin, Quataert

C285. Theoretical Astrophysics Seminar. (2) Two hours of lecture per week. Must be taken on a satisfactory/unsatisfactory basis. The study of theoretical astrophysics. Also listed as Astronomy C285. (F,SP) Arons, Quataert

290A-290Z. Seminar. (2) Course may be repeated for credit. Two hours of seminar per week. Must be taken on a satisfactory/unsatisfactory basis.

C290C. Cosmology. (2) Course may be repeated for credit. Two hours of seminar per week. Must be taken on a satisfactory/unsatisfactory basis. Prerequisites: For undergraduate students, consent of instructor required. Previous background in cosmology recommended. Astronomy C290C. (F,SP) White, Cohn

C290T. Topics in Fluid Mechanics. (1,2) Course may be repeated for credit. One hour of seminar per week. Must be taken on a satisfactory/unsatisfactory basis. Prerequisites: Consent of instructor. Lectures on special topics which will be announced at the beginning of each semester that the course is offered. Topics may include transport and mixing, geophysical fluid dynamics, bio-fluid dynamics, oceanography, free surface flows, non-Newtonian fluid mechanics, among other possibilities. Also listed as Environ Sci, Policy, and Management C291, Mathematics C290C, Chemical Engineering C295M, Nuclear Engineering C290F, Civil and Environmental Engineering C290K, Mechanical Engineering C298A, and Bioengineering C290C. (F,SP) Staff

290N. Seminar in Non-Neutral Plasmas. (2) Course may be repeated for credit. Two hours of seminar per week. Must be taken on a satisfactory/unsatisfactory basis. (F)

290Q. Seminar in Quantum Optics. (2) Course may be repeated for credit. Course does not satisfy unit or residence requirements for doctoral degree. Must be taken on a satisfactory/unsatisfactory basis. Prerequisites: Graduate standing. (F)

290S. Seminar in Quantum Mechanics. (2) Course may be repeated for credit. Two hours of seminar per week. Must be taken on a satisfactory/unsatisfactory basis. (F)

290T. Seminar in Quantum Optics. (2) Course may be repeated for credit. Two hours of seminar per week. Must be taken on a satisfactory/unsatisfactory basis. (F)

291. Seminar in Solar Flares. (1,2) Course may be repeated for credit. One hour of seminar per week. Must be taken on a satisfactory/unsatisfactory basis.

292. Seminar in Solar Flares. (1,2) Course may be repeated for credit. One hour of seminar per week. Must be taken on a satisfactory/unsatisfactory basis.

299. Research. (1-12) Must be taken on a satisfactory/unsatisfactory basis. Prerequisites: Graduate standing. (F,SP) Staff

602. Individual Study for Doctoral Students. (1-8) Course may be repeated for credit. Course does not satisfy unit or residence requirements for doctoral degree. Must be taken on a satisfactory/unsatisfactory basis. Prerequisites: For qualified graduate students. Individual study in consultation with the major field advisor intended to provide an opportunity for qualified students to prepare themselves for the various examinations required of candidates for the Ph.D. (F,SP) Staff

Professional Courses

300. Professional Preparation: Supervised Teaching of Physics. (2) Course may be repeated for credit. One hour of meeting with instructor plus fifteen to twenty hours of teaching per week. Must be taken on a satisfactory/unsatisfactory basis. Prerequisites: Graduate standing, appointment as a teaching assistant, or completion of professional seminar. Discussion, problem review and development, guidance of physics laboratory experiments, course development, supervised practice teaching. (F,SP) Staff

Plant and Microbial Biology (College of Natural Resources)

Department Office: 111 Koschild Hall, (510) 642-9999
Student Affairs Office: 111E Koschild Hall, (510) 642-5160
Chair: Brian Staskawicz, Ph.D.
Division Chair, Plant Biology: Brian Staskawicz, Ph.D.
Division Chair, Microbial Biology: John Taylor, Ph.D.
Professors
Thomas D. Bruins, Ph.D. University of Michigan. Fungal molecular ecology
Bob B. Buchanan, Ph.D. Duke University. Plant microbial biochemistry
W. Zacheus Cande, Ph.D. Stanford University. Cell and developmental biology
Lewis J. Fisher, Ph.D. Harvard University. Plant physiology/development
Robert Fletcher, Ph.D. University of California, Berkeley. Plant genetics and molecular biology
Freeing, Ph.D. University of Indiana. Plant molecular biology
Andrew Q. Jackson, Ph.D. University of Manitoba, Canada. Plant virology
Russell L. Jones, Ph.D. University of Wales. Plant physiology
John W. Taylor, Ph.D. University of California, Davis. Developmental biology
Norman Terny, Ph.D. Nottingham University. Environmental plant physiology
Patricia C. Zambryski, Ph.D. University of Colorado. Plant molecular biology
Tobias R. Kaiser, Ph.D. University of California, Berkeley. Developmental morphology of vascular plants
Watson M. Laetsch, Ph.D. Stanford University. Experimental morphology
Richard Mallink, Ph.D. University of California, Berkeley. Plant development and gene regulation
Peter H. Quay, Ph.D. University of Sydney. Plant molecular biology
Brian J. Staskawicz, Ph.D. University of California, Berkeley. Molecular plant biology
Zimmy Renee Sung, Ph.D. University of California, Berkeley. Plant molecular biology
John W. Taylor, Ph.D. University of California, Davis. Developmental biology
Evagoros Vlahos, Ph.D. University of California, Davis. Plant molecular biology
Associate Professors
John Coates, Ph.D. University College Galway. Geomicrobiology, bacterial diversity, industrial microbiology and biotechnology
Assistant Professors
Britt Glaubinger, Ph.D. Baylor College of Medicine. Herpes viruses
Arash Komeili, Ph.D. University of California, San Francisco. Bacterial cell biology
Kathleen Ryan, Ph.D. Johns Hopkins University School of Medicine. Bacterial cell cycle control and signal transduction
Chelsea Specht, Ph.D. New York University. Plant evolution and diversity
Mary Wildermuth, Ph.D. University of Colorado, Boulder. Biochemical synthesis and regulation of small molecules that mediate nitrogen interactions
Adjunct Professors
Sarah C. Hake, Ph.D. Washington University. Plant development
Sheila M. McCormick, Ph.D. University of Missouri. Plant reproductive biology
Kathleen Ryan, Ph.D. Johns Hopkins University School of Medicine. Bacterial cell cycle control and signal transduction
Chelsea Specht, Ph.D. New York University. Plant evolution and diversity
Associate Professors
Barbara Baker, Ph.D. University of California, San Francisco. Genetics and disease resistance
Jennifer Fischler, Ph.D. University of Utah. Plant development
David Ow, Ph.D. Harvard University. Plant and viral gene expression
Adjunct Associate Professors
Frank Harmon, Ph.D. University of California, Davis. Plant molecular biology
Jay Holick, Ph.D. University of Washington, Seattle. Epigenetics
Cooperative Extension Specialist
Peggy Lemaux, Ph.D. University of Michigan
Undergraduate Advisers: Mr. Coates, Mr. Lindow, Mr. Niyogi, Ms. Volkman.
Graduate Advisers: Ms. Zambryski (Chair), Mr. Fischer.

The Division of Plant Biology. The Division of Plant Biology consists of the Division of Plant Biology and the Division of Microbial Biology. Programs at both the undergraduate and graduate levels have been designed to offer students maximum flexibility in defining their own areas of interest. In addition to departmental resources that are available in Koschild Hall, the facilities of the College of Natural Resources Biological Imaging Facility and the United States Department of Agriculture Plant Gene Expression Center are available for the programs of the department.

The Division of Microbial Biology. The Division of Microbial Biology was established recently within the department to provide a focus for microbial biology at Berkeley. There is a growing awareness that microbes and microbial activities are essential to maintaining a high quality of life for all eucaryotes. Moreover, understanding the microbial world is necessary if we are to comprehend the global ecosystem, evolutionary history, and diversity of life on earth. The 21st century will bring a new understanding of the planet’s place in the universe, and the impact of human activities on the plant biosphere is many of the challenges that will continue to fuel the expansion of plant biology research well into the 21st century.

Undergraduate Program in Genetics and Plant Biology

The department’s undergraduate program in genetics and plant biology has been developed as a broadly based program emphasizing the study of plants from the molecular and genetic to organizational levels. Lower division courses are intended to produce a foundation in biological and physical sciences as preparation for advanced study at the upper division level.

Most of the departmental course offerings are accompanied by laboratory classes that focus further on the subject matter. Undergraduate and graduate students are exposed to the latest techniques in genetics and plant biology. The department offers research opportunities in departmental research laboratories to qualified undergraduates and graduate students. These opportunities are offered in the form of Honors Research (PB 116) or Supervised Independent Study and Research (PB 99 and PB 199).

Lower Division. Biology 1A, 1B; Chemistry 1A, 3A, 3AL, 3B; Mathematics 16A, 16B; Physics 8A; approved statistics or computer course; 15 units of approved Humanities and Social Sciences electives; 8 units of Reading and Composition.

For further details and requirements, please con- 
sult pmb.berkeley.edu.

Undergraduate Program in 
Microbial Biology

Microbial biology is a pivotal field of study because microbes are the dominant life form and represent the overwhelming majority of the biomass on the planet. Microbes have fundamental roles in maintaining the health of the biosphere; they degrade environmental pollutants, they supply essential nutrients and chemicals directly to multicellular organisms, and they engage in numerous beneficial symbioses with other organisms. By the sheer number, infectious diseases, and regulate populations of plants and animals, and outbreaks recur in human societies on a global scale. Microorganisms are the evolutionary precursors of chloroplasts and mitochon- 
dria, the energy-producing centers of plants and animals, so even the study of evolutionary bi- ology is not complete without an understanding of microbial biology.

Furthermore, the full diversity of the microbial world is poorly known, because many unique organisms and biochemical processes remain to be discov- ered. The renewed appreciation of the relevance of microbes to all life means that there is an increasing need in government and industry for graduates with knowledge and skills related to mi- crobial biology. The microbial biology (MB) major is designed for students interested in competing for such positions, for pre-med and pre-vet students, for students considering graduate programs in genetics and other students interested in pursuing postgraduate educa- tion in biology.

Lower Division, Biology 1A-1B, Chemistry 1A, 3A, 3AL, 3BL, Mathematics 16A-16B, Physics, approved statistics course; 15 units of approved Hu- manities and Social Science electives; 8 units of Reading and Composition.

Upper Division, MCB 102 or 110, MCB 142 or 140, PMB C112, PMB C112L, PMB C148, Five approved Science Elective Courses totaling 15 units. For further details and requirements, please con- sult pmb.berkeley.edu.

Graduate Program in Plant Biology

The graduate program in plant biology is designed to train students in modern research areas of plant biology. Students' courses of study are designed individually to reflect their interests and career goals. The graduate program features an introductory seminar (Faculty Research Review), a two-semester core course, and additional special topic courses and seminars in areas of faculty specialties. The core course, Critical Thinking in Microbiology, ad- dresses the following areas: 1) Biochemistry, Physi- ology and Development, 2) Genetics and Genomics, 3) Population Biology and Evolution, 4) Ecology, and 5) Pathogenesis. For more information on the Graduate Group in Microbiology, see the full description un- der “Microbiology,” in this General Catalog.

Lower Division Courses

10. Plants, Agriculture, and Society. (2) Two hours of lecture per week. Covers plant biology: in relation to population growth, the social and economic aspects of plant diseases, genetic engineering of plants: a thousand years of crop improvement and modern biotechnology, interactions between plants and the environment and effects of human industrial and agri- cultural activity on plant ecosystems. Knowledge of the physical sciences is neither required nor assumed. (F) Staskawicz

13. Genetic Revolutions. (3) Two hours of lecture and one hour of discussion per week. Covers genetic discoveries have changed our lives. All are controversial. Especially changed are human physical and mental health, agriculture, social systems, and worldviews. Having DNA-sequenced genomes, including hu- man, accelerates discovery. This course will study the science, history, and philosophical implications behind past discoveries and will contemplate future genetic revolutions. (SP) Freeling

24. Freshman Seminar. (1) One hour of discussion per week. Must be taken concurrently with Freshman Seminar. (SP) Formerly 20. Reading and discussion with Plant and Microbial Biology faculty on current research and topics in plant and microbial biology. Topics which may be discussed include plant development, plant pathology, biological control techniques, and applications of genetic engineering to plant sciences. (F,SP) Staff

39. Freshman/Sophomore Seminar. Course may be repeated for credit as topic varies. One hour of lecture per week per unit. Sections 1-2 to be graded on a letter-grade basis. Sections 3-4 to be graded on a passed/not passed basis. Prerequisites: GPA of 3.4 or higher; lower division major. (F,SP) Staff

40. The (Secret) Life of Plants. (3) Two hours of lec- ture and one hour of discussion per week. Covers con- temporary research on plant growth and development. (SP)Lindow

Scores on standardized tests, such as the Grad- uate Record Examination, will be required of all applicants. Students seeking detailed information about matters such as the curriculum, and courses of financial support should contact the stu- dent affairs assistant or the graduate adviser.

Graduate Program in Microbial Biology

The Department of Plant and Microbial Biology ad- ministers the Graduate Group in Microbiology which awards the Ph.D. degree in Microbiology at UC Berke- ley. A Graduate Group is an interdepartmental group of faculty who offer a program in an area which crosses departmental boundaries. A Graduate Group in Microbiology is composed of 41 faculty from diverse departments. The graduate program features an introductory seminar (Faculty Research Review), a one-semester core course and additional special topic courses and seminars in areas of faculty specialties. The core course, Critical Thinking in Microbiology, ad- dresses the following areas: 1) Biochemistry, Physi- ology and Development, 2) Genetics and Genomics, 3) Population Biology and Evolution, 4) Ecology, and 5) Pathogenesis. For more information on the Graduate Group in Microbiology, see the full description un- der “Microbiology,” in this General Catalog.

Lower Division Courses

10. Plants, Agriculture, and Society. (2) Two hours of lecture per week. Covers plant biology in relation to population growth, the social and economic impact of plant disease, genetic engineering of plants: a thousand years of crop improvement and modern biotechnology, interactions between plants and the environment and effects of human industrial and agri- cultural activity on plant ecosystems. Knowledge of the physical sciences is neither required nor assumed. (F) Staskawicz

13. Genetic Revolutions. (3) Two hours of lecture and one hour of discussion per week. Covers genetic discoveries have changed our lives. All are controversial. Especially changed are human physical and mental health, agriculture, social systems, and worldviews. Having DNA-sequenced genomes, including hu- man, accelerates discovery. This course will study the science, history, and philosophical implications behind past discoveries and will contemplate future genetic revolutions. (SP) Freeling

24. Freshman Seminar. (1) One hour of discussion per week. Must be taken concurrently with Freshman Seminar. (SP) Formerly 20. Reading and discussion with Plant and Microbial Biology faculty on current research and topics in plant and microbial biology. Topics which may be discussed include plant development, plant pathology, biological control techniques, and applications of genetic engineering to plant sciences. (F,SP) Staff

39. Freshman/Sophomore Seminar. Course may be repeated for credit as topic varies. One hour of lecture per week per unit. Sections 1-2 to be graded on a letter-grade basis. Sections 3-4 to be graded on a passed/not passed basis. Prerequisites: GPA of 3.4 or higher; lower division major. (F,SP) Staff

40. The (Secret) Life of Plants. (3) Two hours of lec- ture and one hour of discussion per week. Covers con- temporary research on plant growth and development. (SP) Lindow

C96. Studying the Biological Sciences. (1) Two hours of lecture per week. Must be taken on a passed/not passed basis. Prerequisites: Consent of in- structor. Freshmen will be introduced to the "culture" of the biological sciences, along with an in-depth orienta- tion to the academic life and the culture of the uni- versity as they relate to majoring in biology. Students will learn study concepts, skills, and how to use them in their major course, and as future science pro- fessionals. Restricted to freshmen in the biology schol- ars program. Also listed as Integrative Biology C96 and Molecular and Cell Biology C96. (F) Kane

98. Directed Group Study. (1-3) Course may be re- peated for credit. One to three units for a group study per week. Must be taken on a passed/not passed basis. Lectures and small group discussions focusing on topics of interest, varying from semester to semester. (SP) Staff

99. Supervised Independent Study and Research. (1-3) Course may be repeated for credit. One to three units for a group study per week. Must be taken on a passed/not passed basis. Prerequisites: GPA of 3.4 or higher; lower division major. Lower division independent study and research intended for the academically superior student. En- rollment only with prior approval of faculty advisor di- recting the research. (SP,SP) Staff

Upper Division Courses

C102. Diversity of Plants and Fungi. (2) Two hours of lecture per week. Prerequisites: Biology 1A-1B. Must be taken concurrently with C102L. An integrated treat- ment of the biology and evolution of the major groups in the plant, algal, and fungal kingdoms. Also listed as Integrative Biology C101. (F) Staff

C102L. Laboratory in Diversity of Plants and Fungi. (2) Four hours of laboratory per week and two one-day field trips. Prerequisites: Biology 1A-1B. Must be taken concurrently with C102L. Laboratory for C102. Also listed as Integrative Biology C101L. (F) Staff

C103. Bacterial Pathogenesis. (3) Three hours of lec- ture per week. Prerequisites: Molecular and Cell Bi- ology C100A/Chemistry C130 or Molecular and Cell Biology 102 or consent of instructor. This course for upper division and graduate students will explore the molecular and cellular basis of microbial pathogenesis. The course will focus on model microbial systems which illustrate mechanisms of pathogenesis. Most of the emphasis will be on bacterial pathogens of mam- mals, but there will be some discussion of viral and protozoan pathogens. There will be an emphasis on experimental approaches. The course will also include some aspects of bacterial genetics and physiology, immu- nity response to infection, and the cell biology of host-parasite interactions. Also listed as Public Health C102 and Molecular and Cell Biology C103. (SP) Staff

C107. Principles of Plant Morphology. (2) Two hours of lecture per week. Prerequisites: Biology 1A-1B; must be taken concurrently with 107L. Formerly 107. An analysis of the cellular parts of plants, especially the higher forms, with em- phasis on the developmental mechanisms responsible for this variation in form and the significance of this di-
versity in relation to the environments in which plants grow. Also listed as Integrative Biology C107. (F) Kaplan
C107L. Laboratory for Principles of Plant Morphology. (2) Six hours of laboratory per week. Prerequisites: Biology 1A-1B; must be taken concurrently with 107. Formerly Plant Biology C107L. (F) Randall, Taylor
110L. Laboratory for Biology of Fungi. (2) Six hours of laboratory per week. Prerequisites: Biology 1A-1B; Integrative Biology 101 recommended. Must be taken concurrently with 110L. Laboratory designed to accompany 110, Biology of Fungi. Several field trips are offered including day trips to a mushroom farm, a winery and a cheese factory, and a weekend mushroom foray. (F) Taylor
C112. General Microbiology. (4) Three hours of lecture and one hour of discussion per week. Prerequisites: Molecular and Cell Biology C100A/Chemistry C130 or 102 or consent of instructor. This course will explore the diversity of living organisms and the physiological and biochemical diversity among members of the two major domains, Bacteria and Archaea. The ecological significance and evolutionary origins of this diversity will be discussed. Molecular, genetic, and structural-function analyses of microbial processes; adaptive responses and microbial capability, and macromolecular syntheses will be emphasized. Also listed as Molecular and Cell Biology C112. (F) Ludden, Ryan, Zusman
C112L. General Microbiology Laboratory. (2) Four hours of laboratory per week plus one hour of discussion per week. Prerequisites: C112 or Molecular and Cell Biology C112 (may be taken concurrently). Experimental techniques of microbiology designed to accompany the laboratory in C112 and C148. The primary emphasis in the laboratory will be on the cultivation and physiological and genetic characterization of bacteria. Laboratory exercises will include the observation, enumeration, and isolation of bacteria from selected environments. Also listed as Molecular and Cell Biology C112L. (F) Kustu
113. California Mushrooms. (2) Three hours of laboratory per week and three weekend field trips. Prerequisites: Consent of instructor. This is a hands-on class in identification of macro fungi. Emphasis will be on the identification of fresh and dried fungi. Short course lectures at the beginning of labs focus on mushroom systematic, collection techniques, and identification. Three weekend field trips are required in addition to the three weekend field trips with fungi recommended, but not required. Grades are based on tests and a collection. Offered alternate odd years. (F) Bruns
C114. Introduction to Comparative Virology. (4) Three hours of lecture per week. Prerequisites: Introductory Chemistry (1A or 3A-3B) or equivalent and introductory biology (1A-1B or equivalent) and general biochemistry (100 or equivalent)—preferably completed but may be taken concurrently. Viruses will be considered as infectious agents of bacteria, plants, and animals (vertebrates and invertebrates). Several families of viruses will be compared with respect to biochemical, structural and morphological properties, and strategies for replication. Also listed as Environmental Science, Policy, and Management C138 and Molecular and Cell Biology C114. (SP) Volkman, Jackson
C116. Microbial Diversity. (3) Three hours of lecture per week. Prerequisites: Upper division standing. C112 or consent of instructor and organic chemistry (may be taken concurrently). Formerly 116. This course is designed for upper-division and graduate students will broadly survey myriad types of microbial organisms, both prokaryote and eucaryote, using a phylogenetic framework to organize the concept of "biodiversity." Emphasis will be on understanding the evolutionary development of the many biochemical themes, how they mold our biosphere, and the organisms that affect the global biochemistry.

Molecular mechanisms that occur in different lineages will be compared and contrasted to illustrate fundamental biological strategies. Graduate students additionally should enroll in C126, Microbial Diversity Workshop. Also listed as Molecular and Cell Biology C116. (SP) Staff
120. Biology of Algae. (2) Two hours of lecture per week. Prerequisites: Biology 1A-1B; Integrative Biology 101 recommended. Must be taken concurrently with 120L. Geographical and ecological strategies of infection and replication. Also listed as Molecular and Cell Biology 120. (SP) Nyogi
120L. Laboratory for Biology of Algae. (2) Four hours of laboratory per week plus field trips. Prerequisites: Biology 1A-1B; Integrative Biology 101 recommended. Must be taken concurrently with 120. Laboratories include study of representative types, identification of specimens collected during several field trips, and experiments on development, physiology, and molecular genetics. (SP) Nyogi
C134. Chromosome Biology/Cytogenetics. (3) Two hours of lecture and one hour of discussion per week. Prerequisites: Upper division genetics or cell biology course; concurrent enrollment with consent of instructor. Survey of behavior, structure, and function of chromosomes with emphasis on behavior in model organisms. Topics include mitosis, meiosis, chromosome aberrations, genome function, dosage compensation, transposable elements and modern genomics. Also listed as Molecular and Cell Biology C134. (SP) Canseco, Hollick
135. Physiology and Biochemistry of Plants. (3) Three hours of lecture per week. Prerequisites: Biology 1A-1B. A study of physiological and biochemical processes in higher plants, including environmental strategies adopted by plants, Arabian and genetic characterization of bacteria. Laboratory exercises will include the observation, enumeration, and isolation of bacteria from selected environments. Also listed as Molecular and Cell Biology C112L. (F) Kustu
145. Genomics. (4) Three hours of lecture and one hour of discussion per week. Prerequisites: Molecular and Cell Biology 102 or 110. In-depth introduction to genomics, including genome sequencing; bioinformatics; gene function; complex trait mapping; DNA microarrays and their uses; proteomics; structural genomics. Also listed as Molecular and Cell Biology C145. (SP) Brenner, Eisner
C146. Topics in Computational Biology and Genomics. (4) Three hours of lecture and one hour of discussion per week. Prerequisites: Bioengineering 114, 120, Computer Science 61A, or equivalent ability to write programs in Java, Perl, C, or C++; Molecular and Cell Biology 100, 102, or equivalent; or consent of instructor. Instruction and discussion of topics in genomics and computational biology. Working from evolutionary concepts, the course will cover principles and application of molecular sequence comparison, genome sequencing, and genome annotation and analysis. Also listed as Bioengineering C146 and Molecular and Cell Biology C146. (SP) Brenner, Eisen
C148. Microbial Genomics and Genetics. (4) Three hours of lecture and one hour of discussion per week. Prerequisites: Molecular and Cell Biology 100 or 102. Formerly Plant and Microbial Biology 118. Course emphasizes bacterial and archaeal genetics and comparative genomics. Genetics and genomic methods used to dissect metabolic and development processes in bacteria, archaea, and selected microeukaryotes. Genetic mechanisms integrated with genomic information to address integration and diversity of microbial processes. Introduction to the use of computational tools for analysis of microorganism genomes and determining relationships among bacteria, archaea, and microbial eukaryotes. Also listed as Molecular and Cell Biology C148. (SP) Brenner, Glass
150. Plant Cell Biology. (3) Three hours of lecture per week. Prerequisites: Biology 1A-1B. An introduction to the structure, dynamics, and function of plant cells: organelle structure and dynamics; cell wall organization and regulating small and large macromolecules; cellular signaling: cell division and specialization. (F) Luan, Sung
150L. Laboratory for Plant Cell Biology. (1) Three hours of laboratory/discussion per week. Prerequisites: Biology 1A-1B. Must be taken concurrently with 150. Formerly Plant Biology C150L. Laboratory for studies in cell biology, microscopy, and molecular tools for studying cell biology. (F) Luan, Sung
160. Plant Molecular Genomics. (3) Three hours of lecture per week. Prerequisites: Biology 1A-1B. A consideration of plant genetics and molecular biology. Introduction of nuclear and organelle genome structure and function: regulation of gene expression in response to environmental and developmental stimuli; clonal analysis; investigation of the molecular and genetic bases for the exceptional cellular and developmental strategies adopted by plants. (SP) Fischer, Hake
160L. Laboratory for Plant Molecular Genetics. (1) Three hours of lecture/discussion per week. Prerequisites: Biology 1A-1B. Must be taken concurrently with 160. Plant Molecular Genomics. (SP) Staff
170. Modern Approaches in Plant Biotechnology. (3) Three hours of lecture per week. Prerequisites: Biology 1A-1B. This course is designed to introduce students to the principles and applications of modern plant biotechnology. Basic concepts of modern agriculture is highlighted in this biotechnology application. Emphasis will be placed on understanding the tools and strategies involved in optimizing plant productivity. (SP) Staskawicz, Jackson
180. Environmental Plant Biology. (2) Two hours of lecture per week. Prerequisites: Biology 1A-1B. An integrated and multidisciplinary approach to the study of interactions between plants and the environment. Introduces physical parameters in the global and micro-environment that affect plant function, and molecular, cellular, and developmental aspects of plant response to suboptimal/ adverse conditions. Underlying biochemistry, physiology, and molecular biology of plant adaptation and acclimation mechanisms. Examines consequences of industrial activity on plant growth and productivity. (SP) Melis, Terry
185. Techniques in Light Microscopy. (3) Two hours of lecture and three hours of laboratory per week. The course will be a detailed overview of the practice of light microscopy as applied to scientific investigation. The course will include a thorough and appropriate use of the light microscope for biological scientists; however students of other disciplines are welcome. The course will cover optical microscope theory, microscope components and mechanics, and optical techniques including detailed descriptions, demonstrations, and use of all the modern light microscope contrast methods. Also, the course will cover contemporary digital methods of 2D imaging for fluorescence microscopy as well as a thorough discussion and practice of the 3D imaging techniques of confocal and deconvolution microscopy. Since digital image processing is an important part of modern light microscopy, the course will include a thorough survey of 2D, 3D, and 4D image processing and analysis software. Students will receive hands-on experience in all microscope and digital imaging techniques via direct instruction and use of various software packages. College of Natural Resources Biological Imaging Facility. (SP) Ruzin
H196. Honors Research. (1-4) Course may be repeated for credit. Prerequisites: Enrollment in departmental honors program. Overall GPA of 3.20 or better; approval of instructor. Individual laboratory research followed by a written report and an oral presentation under the supervision of a faculty member. (F,SP, Staff
198. Directed Group Studies in Plant Biology. (1-3) Course may be repeated for credit. One hour of discussion per unit per week. Must be taken on a pass/fail basis.
200. Plant Biochemistry. (2) Two hours of lecture per week. Prerequisites: Consent of instructor. Core course for first year graduate students. A consideration of biochemical processes in plants integrating structure and function. Class format involves lectures and discussion of readings of historical and contemporary papers. (F) Freeing, Hollick, Niyogi

200C. Molecular Genetics of Plant Development. (2) Two hours of lecture per week. Prerequisites: Consent of instructor. Core course for first year graduate students. A consideration of cellular differentiation and pattern formation, and aspects of hormone action in plants. Class format involves lectures and discussion of readings of historical and contemporary papers. (SP) Luan, Zambrayski

201. Faculty Research Review. (2) Three hours of lecture per week. Must be taken on a satisfactory/unsatisfactory basis. Prerequisites: Consent of instructor. Presentation and discussion of faculty research in the areas of plant and microbial biology. Faculty speakers review recent advances in their area of expertise and present an outlook of current research activities in their laboratories. The format of the class is designed to stimulate interaction and discussion between instructor and students in the course of each presentation. (F) Staff

202. Faculty Research Review. (1) One hour of lecture per week. Must be taken on a satisfactory/unsatisfactory basis. Prerequisites: Consent of instructor. Presentation and discussion of faculty research in the area of microbial biology. Faculty speakers review recent advances in their area of expertise and present an outlook of current research activities in their laboratories. The format of the class is designed to stimulate a dialogue between instructor and students in the course of each presentation. (F) Staff

210. Scientific Reasoning and Logic. (1) One hour of lecture per week. The objectives of this class are to teach students to critically read and interpret scientific papers. Students will read and discuss strongly and poorly reasoned papers. At the end of the class the student should understand the logic and reasoning which make a paper strong, often classic, contribution. (F) McCormick

C216. Microbial Diversity Workshop. (1) One hour of workshop per week. Prerequisites: Graduate standing; C112 or equivalent. Instructor and organic chemistry (may be taken concurrently). This workshop for graduate students will parallel C116, Microbial Diversity, which should be taken concurrently. Emphasis in the workshop will be on review of research literature and formulation of paper pertinent to research in microbial diversity. Also listed as Molecular and Cell Biology C216. (SP) Staff

220. Critical Thinking in Microbiology. (3) One and one-half hours of lecture and one and one-half hours of discussion per week. Prerequisites: C112 or equivalent (may be taken concurrently). An overview of microbial evolution (including phylogenetics and population genetics), physiology and biochemistry, genetics and development, host parasite interactions, and ecology will be provided, emphasizing new research directions and involving students in discussions of primary literature. Conceptual issues and/or research approaches and technologies that will provide a broad perspective of microbial biology. Readings and discussions of recent primary literature will enable students to develop skills in critical analysis of literature. (SP) Lindow

238. Readings in Environmental Microbiology. (1) Course may be repeated for credit. One hour of discussion per week. Must be taken on a satisfactory/unsatisfactory basis. Prerequisites: Consent of instructor. Formerly Environmental Science, Policy, and Management 238A. Special Topics and Advanced Seminars in Plant Pathology. Seminar/discussion by graduate students of current research in the field of plant pathogenic bacteria. (F) Lindow

C246. Topics in Computational Biology and Genomics. (4) Three hours of lecture, one and one-half hours of paper review, and discussion per week. Prerequisites: Bioengineering 142, Computer Science 61A, or equivalent ability to write programs in Java, Perl, C, or C++; Molecular and Cell Biology 100, 102 or equivalent; or consent of instructor. Instruction and discussion of topics in genomics and computational biology. Working from evolutionary concepts, the course will cover principles and application of molecular sequence comparison, genome sequencing and functional annotation, and phylogenetic analysis. Also listed as Bioengineering 224E and Molecular and Cell Biology C246. (SP) Brenner, Eisen

290. Seminar. (1) Course may be repeated for credit. One hour of seminar per week. Must be taken on a satisfactory/unsatisfactory basis. Prerequisites: Consent of instructor. Advanced study in various fields of plant biology. Topics will be announced in advance of each semester. Enrollment in more than one section permitted. (F,SP) Staff

297. Grant Writing and Research Presentations. (2) Two hours of lecture per week. Each student will write a grant proposal in three steps: a one page outline, a three-page pre-proposal, and a complete 10-page grant proposal. There will be feedback at each step in the process—each participant will review the other grants proposals. Some of the scheduled classes will include instruction on the outlines and pre-proposals, and the last class will be organized as a grant panel, with students assigned as primary and secondary reviewers. (SP) McCormick

298. Plant Biology Group Studies. (1-6) Course may be repeated for credit. One hour of lecture/discussion per week per unit. Sections 1-2 to be offered on a satisfactory/unsatisfactory basis. Section 3 to be offered on a letter-grade basis. Other sections will be offered at the discretion of the instructor. Prerequisites: Consent of instructor: Advanced study of research topics which will vary semester to semester. Enrollment in more than one section permitted. (F,SP) Staff

299. Graduate Research. (1-12) Course may be repeated for credit. Three hours of research/laboratory per week per unit. Prerequisites: Graduate standing. Students enrolled in graduate study of research. (F,SP) Staff

602. Individual Study for Graduate Students. (1-8) Course may be repeated for credit. Course does not satisfy unit or residence requirements for doctoral degree. One 1-hour meeting per week. Must be taken on a satisfactory/unsatisfactory basis. Prerequisites: Graduate standing. Individual study in consultation with the major field adviser, intended to provide an opportunity for qualified students to prepare themselves for the various examinations required of candidates for the Ph.D. (F,SP) Staff

300. Workshop on Teaching. (2) Course may be repeated for a maximum of four units. Two hours of lecture/discussion per week. Must be taken on a satisfactory/unsatisfactory basis. Prerequisites: Graduate student status. Designed for all graduate students. This course has two goals: discussion of questions and problems relating to the GSI’s teaching, and learning how to design and execute a whole course. Effective teaching methods will be introduced by experienced GSIs and faculty. Students will participate in reciprocal classroom visits, visitation and critique of faculty lectures, course design, lecture preparation, sample lecture presentation, and discussion of current literature on teaching. (SP) Staff

400. Digital Imaging for Biologists. (3) Three hours of lecture/demonstration per week. Basic concepts and common applications in digital image processing and analysis with the goal of extracting morphometric information. Topics include image acquisition (including cameras), beginning image processing and analysis, and digital image enhancement. Photoshop, Canvas, IPLab, and other commonly available computer programs on Mac and PC platforms will be used. Additional lectures on file formats usage and advanced document layout are included. (F) Ruzin

Political Economy of Industrial Societies

(Graduate: Students) 201. Shoshana Hall, Jas, berkeley.edu, (510) 642-4466

Group Major Office, International and Area Studies: 101 Stephens Hall, ias.berkeley.edu

Political Economy covers the interaction between politics and economics in both established and developing societies. It is assumed that society, culture, geography, and demographics affect that interaction and are therefore critical contributors to an understanding of the subject. Therefore, any study of political economy must be multi- and interdisciplinary in scope. Although the major has a strong historical component, contemporary problems form the central focus. Students in the major emphasize planning and problem-solving; environmental issues; resource use and distribution; and the challenges of institutional adaptation, value innovation, and changing political equilibrums.
Some of the questions which the major addresses include:

a) the tension between rising consumer demand versus the need to minimize resource depletion and pollution;
b) the different priorities served by traditionalist, capit-alist, and socialist varieties of political economy;
c) the different priorities served by democratic and authoritarian political systems;
d) how international interdependence may under- mine the programs of national governments to cope with unemployment, inflation, trade and payment deficits, health, housing, and welfare problems, and other issues associated with industrialized soci-eties;
e) the importance of organizational structures for policy-making in both the public and private sectors.

The Group Major

Declaring a major in PEIS follows guidelines estab-lished by the College of Letters and Science. Students wishing to declare PEIS:

1) must have completed IAS 45 and Econ 1 or 2, with grades of C or better;
2) are encouraged to have completed at least two semesters of college-level foreign language or the equivalent; and
3) must not be in their final semester of under-graduate work.

Students are reminded that: (1) no coursework for the major may be taken on a passed/not passed basis; and (2) no course may be used to satisfy major requirements.

Double Majors. Double majors must be approved by the dean of the College of Letters and Science and cannot use more than two upper division courses to satisfy requirements in both majors.

Courses Outside L&S. No more than three courses outside the College of Letters and Science may be used to fulfill group major requirements.

Study Abroad. The use of coursework taken at in-stitutions outside the United States to fulfill major requirements is restricted to the equivalent of three semester-length upper division courses. However, courses taken to fulfill the foreign language re-quirement or the group major are not included in this restriction.

Transfer Courses: A maximum of three upper di-vision courses taken at other universities (including those of the Education Abroad Program of the Uni-verse of California) may be transferred into the major. These courses will be accepted only as three of the ten required upper division courses (regardless of unit value) and must be validated by the Office of Undergraduate Admissions and approved by an IAS adviser. Courses used to fulfill foreign language and lower division prerequisites are not included in this restriction but must be ap-proved by an adviser.

Honors Program. To graduate with honors from the group major in PEIS, students must enroll in the two-semester honors seminar, IAS 102 (fall only) and PEIS H195 (spring only), and must ob-tain grade-point averages of 3.6 in the major and 3.5 in intermediate coursework. The honors seminar is taken in addition to a student’s regular coursework for fulfilling requirements for the major and culminates in the writing of a senior thesis. The thesis is read by the PEIS H195 instructor and at least one other faculty member who is selected by the student in consultation with the thesis instruc-tor. Eligibility for participating in the Honors Pro-gram may be checked in the IAS office.

Important note: There is no guarantee that students accepted into the honors program will graduate with honors. Honors recommendations are made after graduation and are based on a number of factors including (but not limited to) major GPA, grades received for IAS 102 and PEIS H195, and faculty adviser recommendations.

Course Plan

There is considerable flexibility within PEIS for stu-dents to pursue programs appropriate to their in-telectual interests and the global areas they wish to stress in their studies. There are, however, min-imum core course requirements that each student must meet. Majors are designated to provide all PEIS students with a common back-ground of knowledge and common intellectual ref-erence points.

The program consists of three tiers of coursework and a foreign language requirement: 1) four lower division courses, covering historical, polit-i cal, quantitative, linguistic, and economic skills essential for upper division coursework and for fu-ture career and educational options; 2) six upper division core courses to provide detailed back-ground for deeper understanding of specific polit-i cal economies; and 3) four courses provide in-depth study in the student’s chosen issue or problem.

In addition to the requirements outlined above, all PEIS majors must demonstrate proficiency in a sin-gle modern foreign language, other than English, equivalent to four college-level semesters.

Foreign Language Requirement

There are three ways that students can fulfill the four-semester language requirement for PEIS, depending on their background and ability.

1) Through coursework: A combination of high school, college, summer program, or college-level coursework may be applied toward the course requirement. At a minimum, students must com-plete the fourth semester of a language with a grade of C- or better. The first, second, and third level of language may be taken on a Pass/No Pass basis; the fourth semester must be taken for a let-ter grade. Language courses need not be taken at Berkeley; courses taken at a community college or any accredited school or university are acceptable. Advanced Placement scores of 5 complete the re-quirement. However, transcripts and score reports must be provided. See an adviser in the IAS office concerning language study abroad.

2) With a proficiency examination: Students who claim knowledge or a specific foreign language proficiency for purposes of the four-semester language requirement. However, transcripts and score reports must be provided. See a PEIS or an IAS adviser for approval.

3) Being a non-native English speaker: Non-native speakers of English may use their native language to satisfy this requirement; however, doc-umentation of fourth semester ability is still re-quired. Students can take a proficiency test (see above) or, alternatively, provide documentation that they have been educated in their native language at least through high school or the equivalent of high school.

Lower Division

There are four required courses at the lower divi-sion level. Lower division requirements may be satisfied by 1) successfully completing the appro-priate course or its equivalent, 2) providing evi-dence of AP credit, or 3) with prior consent from a faculty adviser, satisfactorily completing an upper division equivalent. Please consult with the IAS office for current information.

Required Courses. Economics 1 or 2, IAS 45, Po- litical Science 2, Statistics 2 or 20 or 21.

Upper Division

There are 10 required upper division courses spread among four major divisions. These include three courses in conceptual tools; three courses in introductory sequences; and four courses focusing on a student’s concentration in the major.

Note: In fulfilling the upper division major require-ments, students should keep in mind that no more than three courses outside the College of Letters and Science may be used in their major programs and no course used to complete major requirements may be taken on a passed/not passed basis.

I. Conceptual Tools

Section A: two courses in intermediate economics. Choose one of the following sequences: Eco-nomics 100A-100B or Economics 101A-101B or IAS 106-107 or UGBA 101A-101B.

Section B: one course in modern theory and meth-o-dology: PEIS 101.

II. a. Introductory Sequence: Historical Context

Section A: one course in classical works: PEIS 100.


II. b. Introductory Sequence: Political Economy

One course: Business Administration 107; City and Regional Planning 112A; Economics 161; Political Science 120A, 126A, 138B, 138E.

III. Concentration

Four courses. The concentration is the heart of the major. It is the topic or theme within the area of political economy that students choose and define. This part of the program is meant to give students the opportunity to deepen their understanding of the nature of the relationship between politics and economics as it relates to a particular issue. The concentration must be a somewhat broadly based issue or problem within political economy. Students are encouraged to be imaginative in defining a concentration and to discuss their ideas with a faculty or staff adviser before selecting their courses. All concentration courses must be approved by a staff adviser.

In choosing your concentration courses, you should be mindful of three things: First, select courses from different departments. You may choose no more than two courses from the same department. This ensures that you will have the fullest possible range of viewpoints and experiences. Second, all the courses listed in the PEIS handbook have been evaluated and chosen for their appropriate-ness to concentration topics. However, you may also choose courses not listed in the handbook with adviser approval. Third, no courses taken for your concentration can be double-counted toward another requirement. Your concentration state-ment and courses must be approved before you take any concentration courses and must be re-approved any time you wish to change your statement or any of your course choices.

Both defining your concentration topic and deciding on the relevant coursework must be done in con-junction with a PEIS faculty or staff adviser. The con-centration is meant to give students the opportunity to deepen their understanding of the nature of the relationship between politics and economics as it relates to a particular issue. Remember that all concentration courses, which must relate to the concentration topic, must be pre-approved by a PEIS adviser.

The PEIS booklet is available at the IAS office. Al-though every attempt is made to publish an accu-rate list of acceptable coursework, the lists may not be entirely comprehensive.

Minor in European Studies

The minor in European studies is open to all un-dergraduates except PEIS majors. Applications for the minor and a list of appropriate courses are available from the IAS office. Minor applications
must be submitted no later than the last day of in-
struction of the semester immediately preceding the final semester.

Requirements: Students must complete six upper
division courses, including PEIS 100 and 101. The remaining classes must be concentrated in two of three specified fields: politics, business/econo-
mics, and culture and society and distributed evenly between the two chosen fields (i.e., two courses per field).

The following college requirements also apply: 1) At least three of the upper division courses must be taken at Berkeley; and, 2) all courses must be taken for a letter grade; 2) a minimum GPA of 2.0 must be achieved in all coursework used to satisfy the minor requirements; and 4) no more than one course can satisfy requirements for both a major and a minor.

Lower Division Courses

84. Sophomore Seminar. (1,2) Course may be re-
peated for credit as topic varies. One hour of seminar per week per unit for five weeks. This course is designed to provide appropriate back-
grade basis. Prerequisites: At discretion of instructor.

Sophomore seminars are small interactive courses of-
fered by faculty members in departments across the campus.
A seminar offers opportunity for close, regular intellectual contact between faculty members and students in the crucial second year. The topics vary from department to department and sem-
ester to semester. Enrollment limited to 15 sopho-
mores. (F,SP)

98. Directed Group Study. (1-4) Course may be re-
peated for credit. Group meetings to be arranged. Must be taken on a passed/not passed basis. Prerequisites: Consent of instructor. Student-directed course under the supervision of a faculty member. Subject matter to change from semester to semester. (F,SP)

Upper Division Courses

101. Contemporary Theories of Political Economy. (4) Three hours of lecture and one hour of discussion per week. This course is designed to introduce stu-
dents to modern theoretical works of central intellectual debates on 20th century international political econ-
omy. The course explores alternative explanations for inequality in economic development among nations and economic declines of the dominant powers. It will also examine tensions between the increasing “globalization” of that economy and continued frag-
mentation of the international political system in nation-
states. (F,SP)

130. Cross-Listed Topics. (1-4) Course may be re-
peated for credit. Prerequisites: Consent of instructor.

This course is designed to accommodate cross-listed courses offered through other departments, the content of which is applicable to PEIS majors. Content and unit values vary from course to course. (F,SP)

140. Special Topics. (2) Course may be repeated for credit. Three hours of lecture per week for eight weeks.

Prerequisites: Consent of instructor. A short course de-
signed to provide a vehicle to take advantage of short-
term visiting to campus by specialists who have considerable expertise in areas of interest to political economy of in-
dustrial societies. Topics will vary from semester to se-
mcster to semester. (F,SP)

150. Advanced Study in Political Economy of In-
dustrial Societies. (4) Course may be repeated for credit. Three hours of seminar per week. Prerequisites: Consent of instructor. A seminar on a variety of topics in political econ-
omy or related social sciences. Advanced multidisci-
plinary research in current issues of political economy and industrialization. Seminars will focus on specific geographical and temporal areas or topics with appropriate com-
parative material included. A major research project is required as well as class presentations. Topics change each semester. (F,SP)

192. Senior Thesis. (3) Individual weekly meetings. Prerequisites: Upper division standing; consent of in-
structor; senior standing. Formerly 198h and 199h which written contracts have been signed to allow research and write a thesis based on the prospectus developed in and American International Studies 102. The thesis work is reviewed by the honors instructor and a second reader selected by the student. Approval of the thesis topic. Weekly progress reports required. (F,SP)

196. Special Field Research. (1-5) Course may be re-
peated for a maximum of 12 units. 240-300 hour work per semester plus regular meetings with the faculty su-

Supervisor. Prerequisites: Consent of instructor. Students work in small interdisciplinary programs approved in advance by the faculty coordinator and for which writ-
ten contracts have been established between the sponsoring organization and the student. Students will be expected to produce two progress reports for their faculty coordinator during the course of the internship, as well as produce a final paper for the course consisting of no fewer than 35 pages. Other restrictions apply; see advisor.

C196W. Special Field Research. (10,5) Course may be repeated for a maximum of 12 units. 240-300 hours of work per semester plus regular meetings with the faculty supervisor. Students work in selected interdisciplinary programs approved in advance by the faculty coordi-
nator and for which written contracts have been signed to allow research and write a thesis based on the prospectus developed in and American International Studies 102. The thesis work is reviewed by the honors instructor and a second reader selected by the student. Approval of the thesis topic. Weekly progress reports required. (F,SP)

197. Field Studies. (1-4) Course may be repeated for credit. Regular individual meetings. Must be taken on a passed/not passed basis. Prerequisites: Upper di-
vision standing and consent of instructor. Supervised experience relevant to specific aspects of Political Economy of Industrial Societies in off-campus orga-

izations. Regular individual meetings with faculty supervisor and written report. (F,SP)

198. Directed Group Study. (1-4) Course may be re-
peated for credit. Group meetings to be announced. Must be taken on a passed/not passed basis. Prerequisites: Upper division standing and consent of in-
structor. (F,SP)

199. Supervised Independent Study and Research for Undergraduates. (1-4) Course may be repeated for credit. Individual meetings to be announced. Must be taken on a passed/not passed basis. Prerequisites: Written proposal must be approved by a faculty ad-
visor. Enrollment restricted by regulations of the col-
lege. (F,SP)

Political Science

(College of Letters and Science)

Department Office: 210 Barrows Hall, (510) 642-6323
Chair: Preadeep Chhibber, Ph.D.

Professors

Vinod K. Aggarwal, Ph.D. Stanford University. International relations, politica

Mark Bevir, D.Phil. Merton College, Oxford University. History of political thought.

Henry E. Brady, Ph.D. Massachusetts Institute of Technology. Quantitative methodology, American and public policy.


Wendy Brown, Ph.D. Princeton University. Contemporary political theory, feminist political thought.

Bruce E. Cain, Ph.D. Harvard University. California politics, state and local politics, American politics.

Todd R. La Porte, Ph.D. University of California, Los Angeles. South Asian politics, comparative political economy, political parties and development.

J. Collis, Ph.D. technique, electoral behavior, Berkeley.

Political behavior, comparative government.

David M. Colker, Ph.D. University of Chicago. Comparative politics, Latin America, methodology.

John G. Gelber, Ph.D. Yale University. Comparative analysis, Latin American politics.

Robert J. Dittmer, Ph.D. University of Chicago. China Barry Eichengreen, Ph.D. Yale University. Economic history.

M. Steven Fish, Ph.D. Stanford University. Communist and post-communist politics, comparative politics.

A. James Gregor, Ph.D. Columbia University. Methodology, comparative ideology, political economy.


H. S. Long, Ph.D. University of British Columbia. Korea, East Asian international relations and political economy.

Kevin M. McCarthy, Ph.D. Stanford University. Political economy, Chinese, social movements.

M. Steven Fish, Ph.D. Stanford University. Comparative politics, political economy, contemporary Japan and Asian regionalism.

Paul Pierson, Ph.D. Yale University. Comparative political economy and social policy, the contrasting public response to poverty in Western Europe and the United States.

Robert L. Powell, Ph.D. University of California, Berkeley. Formal theory and methodology.


Gerard Roland, Ph.D. Université Libre de Bruxelles (ULB). Travel, tourism, and political economy.

Eric Schickler, Ph.D. Yale University. American politics.

J. Merrill Shanks, Ph.D. University of Michigan. Research methods, methodology and technology, public opinion.

Lawrence S. Soss, Ph.D. Harvard University. Political theory, philosophy, and history of ideas.

Philip H. Tiebout, Ph.D. Yale University. Political psychology, cognitive style, cognitive biases and heuristics, accountability in decision making.

D. Paul Thomas, Ph.D. Harvard University. Political theory, Marxist theory.

David A. Vogel, Ph.D. Princeton University. Governmental regulation and international economic, environmental issues.

Steven K. Vogel, Ph.D. University of California, Berkeley. Comparative politics, comparative international political economy.


Margaret M. Weir, Ph.D. University of Chicago. Historical and political sociology, employment, race, poverty, urban issues.

John Zysman, Ph.D. Massachusetts Institute of Technology. Business, technology and public affairs.

Jytendra Das Gupta (Emeritus), Ph.D. University of California, Berkeley. Comparative politics, ethnic politics, political theory.

Giuseppe Di Palma (Emeritus), Ph.D. University of California, Berkeley. Comparative politics, Western Europe.

N. MacDonald (Emeritus), Ph.D. University of Wisconsin. Political economy, race, poverty, urban issues.

Andrew J. Jorgenson (Emeritus), Ph.D. University of California, Berkeley. Social theory, comparative analysis.

Todd R. LaPorte (Emeritus), Ph.D. Stanford University. Public administration and administration, technology and public affairs.


David O. Lewis (Emeritus), Ph.D. University of Chicago. Public administration, development, Africa.

William K. McEwan (Emeritus), J.D., Ph.D. University of Michigan, Yale University. American constitutional law, public policy.

H. G. Yardin (The Kemon Robson Professor of Political Science Emeritus), Ph.D. University of California, Berkeley. Comparative politics, political sociology.

Robert A. Scalapino (Emeritus), Ph.D. Harvard University. Comparative communism, comparative politics, East Asia.

Kenneth N. Waltz (Emeritus), Ph.D. University of California, Berkeley. International politics and military policy.
Harold L. Wilensky (Emeritus), Ph.D. University of Chicago. Comparative politics, comparative public policy, political economy, political sociology
Raymond E. Wolfinger (Emeritus), Ph.D. Yale University. Comparative politics, legislative behavior, Congress.

Associate Professors
Christopher Ansell, Ph.D. University of Chicago. Organization theory, politics of executives
Karin A. Auer, Ph.D. Harvard University. Comparative politics, political economy of development, Middle East
R. J. Bishop, Ph.D. University of Stanford University. Formal theory, American institutions, comparative institutional analysis
T. Lee, Ph.D. University of Chicago. Politics of race and ethnicity
Jonah D. Levy, Ph.D. Massachusetts Institute of Technology. Comparative politics, political economy, public financial management, French politics
Jaspreet Sekhon, Ph.D. Cornell University. Elections, public opinion, and policy evaluation; statistical methods, applied statistics, causal inference
Laura L. Stokes, Ph.D. University of Michigan. Political behavior, electoral politics, ethics and politics, methodology
J. John Zaller, Ph.D. Harvard University. European politics and comparative political economy
Peter W. Srebnik (Emeritus), Ph.D. University of Michigan. Political psychology, American government, methodology, judicial process

Assistant Professors
Lorenzino: D. Anstis, Ph.D. Stanford University. Comparative politics, African politics, political economy of development
Giacomo Chiozza, Ph.D. Duke University. Cultural attitudes and ideational dynamics
Emesto Dal Bo, Ph.D. University of Oxford. Political economy
Ron Hassner, Ph.D. Stanford University. International security, religious violence, Middle Eastern politics and territorial disputes
David Kard, Ph.D. University of California, Los Angeles. American politics, political institutions, parties, interest groups/social movements, American political development
Geoffrey Kam, Ph.D. University of London. Public opinion, presidency
Robert Van Houweling, Ph.D. Harvard University. American politics
Jason Wittenberg, Ph.D. Massachusetts Institute of Technology. Eastern Europe and the Post-Soviet region

Lecturer
Teim L. Bimes, Ph.D. Yale University. American politics.

The Major
The political science major consists of 12 courses for a total of 48 semester units. The requirements for the major are: Political Science 1, 2, 3, 2 history courses (one on U.S. history and one relating to another geographical area of the world); and any seven upper division Political Science courses from those numbered 101-199. Advanced placement credit does not satisfy any major prerequisites, but students scoring 4 or 5 on the American Government Advanced Placement Exam may substitute two upper division Political Science courses for Polisci 1 before or after declaring the major. (This course, however, may not also be used to fulfill an upper division requirement.)

A list of approved history courses, specific requirement information and detailed course descriptions are available on the Political Science web page at www.polisci.berkeley.edu/Grad/ugrad.html.

All major requirements must be taken on a letter-graded basis.

To declare the major, students must have completed Political Science 1 or its equivalent and Political Science 2 and must attend one of the declaration.orientation sessions. The session schedule is posted on the Undergraduate Advising office web page at www.polisci.berkeley.edu/Grad/ declaration/orientation. Declarations must be done in person. Transfer students may go to the web site at www.assist.org for a list of California community college courses that satisfy University and major requirements.

Honors Program
Declared political science major must have a cumulative point average in the major and a 3.3 grade-point average overall, who have senior standing and who have completed at least two letter-graded upper division political science courses. They are eligible to apply for the honors program. The honors program consists of a two-semester seminar, H190A and H190B (offered in fall/spring only), and culminates in the writing of an honors thesis. Students must also obtain the sponsorship of a member of the faculty who will guide the research. Applications can be made online at www.polisci.berkeley.edu/Ugrad/honors.html.

Further Information
For specific information on field or area concentrations in political science, consult faculty members.

Graduate Program
Information about the graduate program may be obtained from the departmental web site at www.polisci.berkeley.edu/Grad/grad.html.

Lower Division Courses

1. Introduction to American Politics. (4) Three hours of lecture and one or two hours of discussion per week. An introductory analysis of the structure and operations of the American political system, primarily at the national level. (F,SP)

1A. Introduction to American Politics. (4) Three hours of lecture and one or two hours of discussion per week. Politics is the art and noise of collective governance under conditions of scarce resources, conflicting interests, imperfect knowledge, and uncertain outcomes, and unequal power. In 1AC, we learn about the institutions, ideologies, and processes that constitute politics in the U.S. In fulfilling the AC requirement, we further examine how power, equality, and diversity are configured and contested in our politics. The course further examine how power, equality, and diversity are configured and contested in our politics. The course emphasizes active research- and group-based learning. (F,SP)

2. Introduction to Comparative Politics. (4) Three hours of lecture and one or two hours of discussion per week. Analytical and methodological problems of political inquiry, with an emphasis on quantitative and measurement. (F,SP)

3. Introduction to Empirical Analysis and Quantitative Methods. (4) Three hours of lecture and one or two hours of discussion per week. Methodological problems of political inquiry, with an emphasis on measurement and analysis of political processes that all political systems face and examines their particular expression in Western, Communist, and Third World settings. (F,SP)

4. Introduction to Political Theory. (4) Three hours of lecture and one or two hours of discussion per week. An approach to the understanding of politics through the perspectives and language of the political theorist.

24. Freshman Seminars. (1) Course may be repeated for credit as topic varies. One hour of seminar per week. Sections 1-6 to be graded on a passed/not passed basis. Sections 7-8 to be graded on a letter-graded basis. The Berkeley Seminar Program has been designed to provide new students with the opportunity to explore an intellectual topic with a faculty member in a small-seminar setting. Berkeley Seminars are offered in all campus departments, and topics vary from semester to semester.

39. Freshman Sophomore Seminar. Course may be repeated for credit when topic changes. One hour of seminar per week. Sections 1-2 to be graded on a letter-graded or a passed/not passed basis. Sections 3-4 to be graded on a passed/not passed basis. Priority given to freshmen and sophomores. Freshman and sophomore seminars offer lower division students the opportunity to explore an intellectual topic with a faculty member in a seminar setting. Berkeley seminars are offered in all campus departments; topics vary from department to department and from semester to semester.

41. Freshman Seminar. (4) Course may be repeated for credit with consent of department. Three hours of seminar and one hour of conference per week. Topics, experimental in nature, will vary from year to year.

60AC. What is Political Freedom? (4) Three hours of lecture and one and one-half hours of discussion per week. Explores meanings and conundrums of political freedom. What is freedom, how does it relate to other political values (equality, security, community, cultural preservation), how is it won and lost? Canonical political thinkers (Socrates, Machiavelli, Rousseau, Marx, Mill, Arendt, Fanon, Foucault) are read along with novels, legal cases, and material on contemporary controversies. Issues include free speech and hate speech, capitalism, freedom and empire, violent and nonviolent emancipations, rights and identity, racial profiling. This course satisfies the American Cultures requirement. (F,SP) Staff

84. Sophomore Seminar. (1,2) Course may be repeated for credit as topic varies. One hour of seminar per week for one units. One and one-half hours of seminar per week for one units. Two hours of seminar per week per unit for eight weeks. Three hours of seminar per week per unit for five weeks. Sections 1-2 to be graded on a passed/not passed basis. Sections 3-4 to be graded on a letter-graded basis. Prerequisites: At discretion of instructor. Sophomore seminars are small interactive courses offered by faculty members in departments across the campus. Sophomore seminar offers opportunity for close, regular intellectual contact between students and faculty members in the crucial second year. The topics vary from department to department and semester to semester. Enrollment limited to 15 sophomores per section.

98. Directed Group Study for Lower Division Students. (1-3) Course may be repeated for credit with consent of department. Hours to be arranged. Must be taken on a passed/not passed basis. Prerequisites: Consent of instructor. Lectures and small group discussion focusing on topics of interest that vary from semester to semester.

99. Supervised Independent Study. (1-4) By arrangement with faculty. Must be taken on a passed/not passed basis. Prerequisites: Completion of two Political Science courses and a 3.3 GPA. Supervised Independent Study and Research for lower division students, pursuant to the Regulations of the Berkeley Division, Section A230.

Upper Division Courses

American Politics

102. The American Executive. (4) Three hours of lecture and one hour of discussion per week. An analysis of the principal institutions, functions, and problems of the Presidency and the federal executive branch. Special attention will be given to topics of presidential leadership, staffing, the executive branch, and policy formation. Comparative reference to executive processes in other political systems. (F,SP)

102W. The American Executive. (3) Three hours of seminar per week. Prerequisites: Admission to UC Berkeley-Washington Program. For details see learning. Consent of instructor. Lectures and small group discussion focusing on topics of interest that vary from semester to semester.

103. Congress. (4) Three hours of lecture and one hour of discussion per week. An analysis of the principal institutions, functions, and problems of the Congress and the legislative branch. Special attention will be given to topics of congressional leadership, staffing, executive-legislative relations, and policy formation. (F,SP)

103W. Congress. (3) Three hours of seminar per week. Prerequisites: UC Berkeley-Washington Program. For details see learning. Consent of instructor. Lectures and small group discussion focusing on topics of interest that vary from semester to semester.

Political Science / 423

Prefix/course satisfies R&Q requirement
Prefix/course satisfies American Cultures requirement

*Professor of the Graduate School
Recipient of Distinguished Teaching Award
104. Political Parties. (4) Three hours of lecture and one hour of discussion per week. The institutional environment within which American politics takes place. Concept and theory of parties and the American context: their nature and function, origin and development. Party organization and structure. State, national, and local party systems and their variations. Nominations and elections. Offered one directed research paper will be required. (F,SP)

104W. Political Parties. (3) Three hours of seminar per week. Prerequisites: Admission to UC Berkeley Washington Program. For details see learning.berkeley.edu/ucdc. The institutional environment within which American politics takes place. Concepts and history of parties in the American context: their nature and function, origin and development, party organization and structure.

105. The Politician. (4) Three hours of lecture and one hour of discussion per week. The nature of politics, the education of politicians, the structure of ambition, and the ethical values of social behavior in the political world. Sessions with elected officials and party workers on their vocation. Directed field research.

105W. The Politician. (3) Three hours of seminar per week. Prerequisites: Admittance to UC Berkeley Washington Program. For details see learning.berkeley.edu/ucdc. The nature of politics, the education of politicians, the structure of ambition, and the ethical values of social behavior in the political world. Sessions with elected officials and party workers on their vocation.

106A. American Politics: Campaign Strategy—Media. (4) Three hours of lecture per week. Prerequisites: Junior or senior standing. An inside look at how political campaigns operate from the viewpoint of the media, taught by the people who run them. Class material will be directed towards students who are interested in direct involvement in political campaigns or who are seeking a greater understanding of the political process. Students will be required to develop a complete written campaign strategy document in order to fulfill class requirements. Students will be expected to follow political campaign news via the media and be prepared to discuss those developments in class.

106B. American Politics: Campaign Strategy—Management. (4) Three hours of lecture per week. Prerequisites: Junior or senior standing. An inside look at how political campaigns operate from the viewpoint of campaign management, taught by the people who run them. Class material will be directed towards students who are interested in direct involvement in campaign politics or who are seeking a greater understanding of the political process. Students will be required to develop a complete written campaign strategy document in order to fulfill class requirements. Students will be expected to follow political campaign news via the media and be prepared to discuss those developments in class.

108A. Politics, Ethics, and Leadership. (4) Three to four hours of lecture and up to three hours of discussion per week. Those who decide to participate in politics must inevitably make ethical choices. Too often, the moral bases of political decisions are unexamined. This course looks at the political choices of leaders and citizens as they relate to honesty and public rhetoric, corruption and public trust, influence and the appropriate exercise of power, fairness in process and policy outcome, political obligations and duties, and the nature of political calculation. The materials of this course will be drawn from case studies of political choices, relevant legal cases, comparative politics, guest speakers with political experience, and ethical theory. (F,SP) Staff

109. Special Topics in American Politics. Three to four hours of lecture and one hour of discussion per week. See department web site for specific course offerings. (F,SP) Staff

109W. Selected Topics in American Politics—UCDC. (3) Three hours of seminar per week. Prerequisites: Admission to UC Berkeley Washington Program. For details see learning.berkeley.edu/ucdc. Formerly 108W. Topics will vary.

Political Theory

110. Cai-in-the-Capitol. (2) Course may be repeated for credit with consent of department. Two hours of seminar per week. Must be taken on a passed/not passed basis. Prerequisites: Limited to summer Cai-in-the-Capitol interns. The course is designed to provide undergraduates in the major who can understand an underestimating of some important issues facing our national government and an appreciation of the way these issues are dealt with in Washington, D.C. The course outlines the ethical choices that members of Congress must make in their work with Berkeley experts who will make demands of the students’ research skills.

110B. Cai-in-Sacramento. (2) Course may be repeated for credit with consent of department. Two hours of seminar per week. Must be taken on a passed/not passed basis. Prerequisites: Limited to summer Cai-in-Sacramento interns. The purpose of this course is to provide Cai-in-Sacramento interns and other interested UC Berkeley students with a rudimentary understanding of our state government. We will focus on the state legislature and executive branch, exploring both the policy-making process and the politics in Sacramento, which we will learn are quite closely related to one another.

111. Politics and the News Media. (4) Three hours of lecture per week. This course’s objective is to describe and analyze the ways in which the news media have become a part of the political system. In order to understand the political process and the way in which new organizations interact with officials, organized groups, and the public, the students will be required to analyze developments in the media and be prepared to discuss those developments in class.

111A. The Politics of Displacement. (4) Four hours of lecture per week. Antebellum American political history generally follows a routine script in which the purposed of the Revolution was to liberate Americans for self-government and self-determination. Slavery is viewed as an anomaly still needing explanation, and Native American relocation as the consequence of natural forces of immigration and pre-modern social values. In this class, the revolution against traditional political authority embodied in Jefferson’s and Thomas Paine’s attack on the British crown, the rise of slavery, and the conflict with Native America are seen as coherent parts of a cultural and social development that was the 19th and 18th-century America. Using both original antebellum materials, including biographies, history, and literature, and contemporary images from American popular culture such as film, news and magazine articles, and music, we will compare and contrast the experiences of antebellum Native Americans, European immigrants, and African slaves as a connection between the past and the present emerges. This course satisfies the American Cultures requirement. (F,SP) Staff

111W. Politics and the News Media. (4) Course may be repeated for credit with different topic and different instructor. Three hours of lecture per week. Course may be repeated for credit with consent of instructor. Admission to UC Berkeley-Washington Program. For details see learning.berkeley.edu/ucdc. This course’s objective is to describe and analyze the ways in which the news media have become a part of the political system. In order to understand the manner in which new organizations interact with officials, organized groups, and the public, the students will be required to analyze developments in the media and be prepared to discuss those developments in class.

112. History of Political Theory. (4) Three hours of lecture, two hours of discussion, and one hour of conference per week. Major theories from the ancient Greeks to the modern period. Ancient and medieval political thought, including Plato, Aristotle, and St. Augustine. (F,SP)

112B. History of Political Theory. (4) Three hours of lecture, two hours of discussion, and one hour of conference per week. Early modern political thought up to the French Revolution, including Machiavelli, Hobbes, Locke, and Rousseau. (F,SP)

112C. History of Political Theory. (4) Three hours of lecture, two hours of discussion, and one hour of conference per week. Nineteenth century social and political thought, including Burke, Utilitarianism, Marx, and contemporary theory. (F,SP)

112D. History of European Political Theory: The 20th Century. (4) Three hours of lecture and one to two hours of discussion per week. This is a survey course that will examine developments in 20th-century European Political Theory. It will focus on theorists’ contributions and reactions to various major political and intellectual shifts, including Marxism (as “Western Political Theory” as well as institutionalized Soviet communism in its heyday); psychoanalysis; and fascism. (F,SP) Thomas

113A-113B. American Political Theory. (4) Three hours of lecture and two hours of discussion/conference per week. Basic problems of political theory as viewed within the context of American history and institutions. (F,SP)

114A. Theories of Governance: Late 20th Century. (4) Three hours of lecture and one hour of discussion per week. What is governance? How should we explain its emergence? What are its implications for public policy and democracy? This course uses debates about contemporary governance to examine four approaches to political science and political theory. The approaches are rational choice theory, institutionalism, Marxism, and poststructuralism. The course looks at the narrative that each approach provides of the origins and workings of governance since 1979, and at the way these narratives embody theoretical commitments about rationality and power, structure and agency, and grand narratives. The course also explores why questions about contemporary governance are intricately linked to philosophical and normative commitments. This course has a required discussion section. (F,SP)

115C. Marxism and Culture. (4) Three hours of lecture and two hours of discussion per week. The course’s objective is to trace the development of Marxism as an idea system and political ideology since its inception, focusing particularly on developments in “Communist” or “State Socialist” systems, but also including a brief look at Eurocommunist thought.

116. Special Topics in Political Theory. Three hours of lecture and one to two hours of discussion per week. Prerequisites: One of the following courses 112A or 112B or 113A or 113B. Intensive study of one topic, problem, or intellectual movement in political theory. See department web site for specific course offerings. (F,SP) Staff

118A. Three American Cultures. (4) Course may be repeated for credit with department approval. Three hours of lecture per week. The course will examine three American cultural forms. The focus of the course is comparative; readings will center around first-person accounts, written by members of the ethnic groups most immediately involved in each of the cultural forms. The theme is that of identity, seen politically and as culturally: examining how the various ethnic groups involved came to forge a collective identity for themselves. The three groups studied will vary by instructor. See departmental listings for more
specific information. This course satisfies the American Cultures requirement. (F,SP)

International Relations

120A. International Relations. (4) Three hours of lecture and one hour of discussion per week. Comparative foreign policy. (F,SP)

122A. Politics of European Integration. (4) Three hours of lecture and one to two hours of discussion per week. The European Union is the world's most advanced experiment in governance beyond the level of the traditional nation-state. Through the European Union, the main member countries have pooled their national sovereignty and created new ways political authority, economic competition, social cohesion, and culture. Former EU members in comparative politics focus on the separate countries, scholars in international relations emphasize the construction of supranational institutions and transnational identities. This course seeks to synthesize the comparative and international approaches by examining the economic, political, and cultural aspects of integration. Readings are drawn from international relations, comparative politics, public policy, sociology, and some anthropological debates. Course requirements include careful preparation of the readings, discussion sections, participation in a group report on one of the major courses mentioned above, and a closed-book final. Staff

123. Special Topics in International Relations. Three hours of lecture and one hour of discussion per week. The course will focus on two or three major topics, to be announced. Prerequisites: 120A highly recommended. Formerly 123. See department web site for specific course offerings. (F,SP) Staff

124A. War! (4) Three hours of lecture and one hour of discussion per week. The nature and causes of war; the role of international law; international law, and international law and the use of force. (F,SP)

126A. International Political Economy. (4) Three hours of lecture and two hours of discussion per week. Time and one hour of discussion per week. Three to four hours of lecture and two hours of discussion per week. This course presents a broad introduction to contemporary international political economy and the transformation of political institutions. The course is required for juniors and seniors but is open to all students. (F,SP)

Empirical Theory and Quantitative Methods

131A. Applied Econometrics and Public Policy. (4) Three hours of lecture and one hour of discussion per week. Prerequisites: Economics 140 or 141 or consent of instructor. This course focuses on the application of econometric methods to empirical problems in economics and public policy analysis. It provides guidance on issues that arise when analyzing non-experimental social science data and a guide for tools that are useful for empirical research. By the end of the course, students will have an understanding of the types of research designs that can lead to causal inference and be comfortable working with large scale data sets. Also listed as Public Policy C142 and Economics C142. Staff

135. Game Theory in the Social Sciences. (4) Students will receive no credit for C135 after taking Economics 140 or 141. Three hours of lecture and one hour of discussion per week. Formerly 135A. A non-technical introduction to game theory, a branch of applied mathematics concerned with the interaction of players, with a strong emphasis on applications to political science, economics, and other social sciences. Also listed as Economics C110. Staff

Comparative Politics

136A. Theory in Comparative Analysis. (4) Three hours of lecture and one hour of discussion per week. Major themes in comparative analysis. Political systems of the world. This course examines the interaction between politics and markets, both in theory and in practice, explicitly linking classic works on political economy with contemporary political debates. We study how political systems and markets are organized in a wide range of different national settings, looking at both history and contemporary issues. Topics include: 1) Early industrialization in Britain and the United States; 2) Centralization of power in Japan; 3) The varieties of capitalism in contemporary industrialized countries; 4) The newly industrialized countries and East Asia; 5) The problems of development, and 6) The transition from communism to a market economy in Eastern Europe and China. (F,SP)

136B. Method in Comparative Analysis. (4) Three hours of lecture and one to three hours of discussion per week. Application of the comparative method in the study of international economies. Use of comparative method in description, hypothesis-testing, and theory construction. Methodological issues that arise in comparing national units and in making comparisons across different cultures.

137A. Revolutionary Change. (4) Three hours of lecture and one hour of discussion per week. Ideas as turning point of political change; attempts of radical social movements from the Middle Ages to the present day, emphasizing reactions to the rise of modern capitalism, industrial society and the post-industrial age.

137B. Revolutionary Movements. (4) Three hours of lecture and one hour of discussion per week. Ideas as turning point of political change; attempts of radical social movements from the Middle Ages to the present day, emphasizing reactions to the rise of modern capitalism, industrial society and the post-industrial age.

138A. Democracy, Democracies. (4) Course may be repeated for credit with consent of department. Three hours of lecture and one hour of discussion per week. The purpose of this course is to develop an understanding of democracy as a system of government; how it is organized and how it operates; the relationship of politics to war in history; historical episodes that illustrate the issues. Substantive areas include international human rights, and territorial claims.

138B. Russia After Communism. (4) Three hours of lecture and one hour of discussion per week. This course will explore the literature on the political economy of the Internet to determine what policy choices—political, economic, and cultural—are drawn from international relations, comparative politics, public policy, sociology, and some anthropological debates. Course requirements include careful preparation of the readings, discussion sections, participation in a group report on one of the major courses mentioned above, and a closed-book final. Staff

139A. War! (4) Three hours of lecture and one hour of discussion per week. The nature and causes of war; the role of international law; international law, and international law and the use of force. (F,SP)

140 or 141 or consent of instructor.

141. War! (4) Three hours of lecture and one hour of discussion per week. The nature and causes of war; the role of international law; international law, and international law and the use of force. (F,SP)
138F. Immigrants, Citizenship, and the State. (4) Four hours of lecture and one to two hours of discussion per week. This course will examine international migration from a comparative perspective, looking at why people migrate, how citizens respond to the migration, and how states respond to migration. The first part of the course looks at the changing relationship between the state, immigrants, and citizenship. Turning to today’s studies, we will examine the different types of receiving states, each confronted with a different form of migration: a traditional immigrant state, a post-colonial state, a non-traditional immigrant state that imports migrant workers, a highly industrialized latetcomer state, and a newly industrialized state. (F.SP) Staff

138G. National Success and Failure in the Age of a Global Economy: From Pleats to Cleats. (4) Three hours of lecture and one hour of discussion per week. In the present era political, economic, and social organization powerfully influence national capacity to assure economic success, real and rising incomes for the population, and political success, basic survival, and the protection of core values. This course looks at the continual process of international competition and transformation, and examines which factors separate the winners from the losers. We will gain leverage into these questions by examining critical moments in the 19th and 21st centuries and analyzing according to national responses. What choices signal success? Can the failures be avoided? The course will discuss whether globalization is shunting aside national political choices, where law, courts, and public opinion are in fact a sequence of national and regional stories played out on a larger stage. We will consider how economic constraint structures political choice and national response to the global economy. But we will also examine how globalization shapes market dynamics and national innovations. We will learn about all sorts of things from the politics of French fashion to why Japanese make good cars. (F.SP) Zysman

139B. Development Politics. (4) Three hours of lecture and one hour of discussion per week. Politics of economic development in developing countries. Comparative analysis of the theories and practice of development in the light of contemporary experience. Political strategies of agrarian, industrial, educational, and regional development and their impact on autonomy, welfare, justice, and human development. (F.SP)

139C. Selected Issues of Development Politics. (4) Course may be repeated for credit as topic varies. Three hours of lecture and one hour of discussion per week. Prerequisites: Consent of instructor. See departmental announcements. Topics will vary with instructor.

140. Selected Topics in Comparative Politics. Four hours of lecture and one hour of discussion per week. See department web site for specific course offerings. (F.SP) Staff

Area Studies

141C. Politics and Government in Eastern Europe. (4) Three hours of lecture and one hour of discussion per week. Modern politics and government in the states of Eastern Europe presented within a broader cultural, historical, and sociological framework. Problems of economic development in developing countries. Comparative analysis of the theories and practice of development in the light of contemporary experience. Political strategies of agrarian, industrial, educational, and regional development and their impact on autonomy, welfare, justice, and human development. (F.SP)

142A. Middle East Politics. (4) Three hours of lecture and one to three hours of discussion per week. The Middle East in world affairs, international relations and domestic politics of contemporary states in the Middle East; policies and strategy of major powers; supranational movements, regional political and security organizations. The area comprises Turkey, Iran, Afghanistan, Israel, and the Arab countries.

143A-143B. Northeast Asian Politics. (4,4) Three hours of lectures and one hour of discussion per week. The structure and evolution of political institutions in China, Japan, and Korea. Emphasis upon topics as nationalism, political modernization, and ideology.

138F. Immigrants, Citizenship, and the State. (4) Four hours of lecture and one to two hours of discussion per week. This course will examine international migration from a comparative perspective, looking at why people migrate, how citizens respond to the migration, and how states respond to migration. The first part of the course looks at the changing relationship between the state, immigrants, and citizenship. Turning to today’s studies, we will examine the different types of receiving states, each confronted with a different form of migration: a traditional immigrant state, a post-colonial state, a non-traditional immigrant state that imports migrant workers, a highly industrialized latetcomer state, and a newly industrialized state. (F.SP) Staff

138G. National Success and Failure in the Age of a Global Economy: From Pleats to Cleats. (4) Three hours of lecture and one hour of discussion per week. In the present era political, economic, and social organization powerfully influence national capacity to assure economic success, real and rising incomes for the population, and political success, basic survival, and the protection of core values. This course looks at the continual process of international competition and transformation, and examines which factors separate the winners from the losers. We will gain leverage into these questions by examining critical moments in the 19th and 21st centuries and analyzing according to national responses. What choices signal success? Can the failures be avoided? The course will discuss whether globalization is shunting aside national political choices, where law, courts, and public opinion are in fact a sequence of national and regional stories played out on a larger stage. We will consider how economic constraint structures political choice and national response to the global economy. But we will also examine how globalization shapes market dynamics and national innovations. We will learn about all sorts of things from the politics of French fashion to why Japanese make good cars. (F.SP) Zysman

139B. Development Politics. (4) Three hours of lecture and one hour of discussion per week. Politics of economic development in developing countries. Comparative analysis of the theories and practice of development in the light of contemporary experience. Political strategies of agrarian, industrial, educational, and regional development and their impact on autonomy, welfare, justice, and human development. (F.SP)

139C. Selected Issues of Development Politics. (4) Course may be repeated for credit as topic varies. Three hours of lecture and one hour of discussion per week. Prerequisites: Consent of instructor. See departmental announcements. Topics will vary with instructor.

140. Selected Topics in Comparative Politics. Four hours of lecture and one hour of discussion per week. See department web site for specific course offerings. (F.SP) Staff

Area Studies

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143A-143B. Northeast Asian Politics. (4,4) Three hours of lectures and one hour of discussion per week. The structure and evolution of political institutions in China, Japan, and Korea. Emphasis upon topics as nationalism, political modernization, and ideology.
189. Selected Topics in Public Organization and Policy. (4) Course may be repeated for credit with consent of department. Three hours of lecture and one hour of discussion per week. See departmental announcements for topics. (F,SP) Staff

Special Studies

H190A. Honors Seminar, (4) Two hours of seminar per week plus individual conferences. Must be taken on a passed/not passed basis. Prerequisites: Consent of instructor. Must be a declared political science senior with a 3.5 GPA in the major and a 3.5 GPA overall. Eligible students must have taken at least two courses in political science at Berkeley. H190A is the first of a two-semester research seminar designed to provide support and structure to political science seniors writing an honors thesis. To register, honors students must maintain the minimum GPA for honors and complete H190B with a B+ or better. For additional details, please consult the Undergraduate Advising Office or www.polisci.berkeley.edu. (F,SP) Staff

H190B. Honors Seminar, (4) Two hours of seminar per week plus individual conferences. Prerequisites: Consent of instructor. Must be a declared political science senior with a 3.5 GPA in the major and a 3.5 GPA overall. Eligible students must have taken at least two courses in political science at Berkeley. H190B is the second of a two-semester research seminar designed to provide support and structure to political science seniors writing an honors thesis. To register, honors students must maintain the minimum GPA for honors and complete H190B with a B+ or better. For additional details, please consult the Undergraduate Advising Office or www.polisci.berkeley.edu. (F,SP) Staff

H195A-H195B. Senior Honors Thesis. (4) Hours to be arranged. Prerequisites: Consent of faculty sponsor and departmental honors instructor. Must be taken for a letter grade. Prerequisites: Senior honors candidate. Independent research and thesis. Satisfies thesis requirement for honors candidates. Both seminars and the honors thesis must be taken and completed with a final grade of B+ or better in order for departmental honors to be awarded. Applications and details through the Undergraduate Office. (F,SP)

196. Special Research Project. (1-4) Course may be repeated for credit. Regular individual meetings with faculty sponsor and departmental honors instructor. Prerequisites: Consent of faculty sponsor and departmental instructor. Independent study of an advanced topic resulting in a substantial research paper. (F,SP)

196S. UC Sacramento Internship and Research Seminar. (9-13) Course may be repeated for credit with consent of faculty sponsor and departmental honors instructor. Three hours of internship per week. Prerequisites: Consent of instructor. This seminar will introduce students to the theory and practice of policy analysis and development as it relates to legislative action at the state level to maximize students’ internship experience. The internship component of the course will provide students with a challenging opportunity to engage in experiential learning in some aspects of the political, policy-making, or governmental processes in California’s state capital. This course will provide students with an in-depth understanding of the public policy and political process in California and to develop analytical writing skills to produce a 25-30 page research paper developing and reflecting on this understanding. This course is part of the University of California Center Sacramento Program and is located in Sacramento. (F,SP) Dymski

196W. Special Field Research. (10.5) Course may be repeated for a maximum of 12 units. 240-300 hours of work per semester plus regular meetings with the faculty supervisor. Prerequisites: Consent of instructor. Formerly 186W. Students work in selected internship programs approved in advance by the faculty coordinator and for which written contracts have been established between the sponsoring organization and the student. Students may alternate two progress reports for their faculty coordinator during the course of the internship, as well as a final paper for the course consisting of at least 35 pages. Other restrictions apply; see faculty adviser. Also listed as Gender and Women’s Studies C196W, History of Art C196W, Interdisciplinary Studies C196W, Mass Communications C196W, History C196W, Political Economy of Industrial Soc C196W, and Sociology C196W.

Field Study in Political Science. (1-3) By arrangement with faculty. Must be taken on a passed/not passed basis. Prerequisites: Consent of faculty sponsor and department chair. Supervised experience relevant to specific aspects of political science in off-campus organizations. Regular individual meetings with faculty sponsor and written reports required. (F,SP)

Directed Group Study for Undergraduates. (1-4) Course may be repeated for credit. By arrangement with faculty. Must produce a minimum of 10 pages of written work for each unit of credit earned. Must be taken on a passed/not passed basis. Submission of study proposal by faculty sponsor to the department chairman one month in advance of the semester to be offered. Group studies of selected topics which vary from year to year.

Supervised Independent Study and Research for Undergraduates. (1-4) Course may be repeated for credit. By arrangement with faculty. Must be taken on a passed/not passed basis. Prerequisites: Open only to juniors and seniors. Enrollment is restricted by departmental regulation. (F,SP)

Graduate Courses

Properly qualified undergraduates may be admitted to graduate courses or seminars with special permission of the instructor.

Comparative Analysis

200. Major Themes in Comparative Analysis. (4) Three hours of seminar per week. Subject and texts to be studied vary with instructor. See departmental announcements.

201B. Comparative Analysis of Industrial Democracies. (4) Three hours of seminar per week. The comparative study of politics in Western societies. The place of parties, political structures, interest groups, and economic institutions. The relationship between domestic political developments and the international system. The effect of economic development on political change. The effect of labor politics on national politics.

201D. Governance of the E-conomy. (4) Three hours of lecture per week. New digital technologies, changing market structures, and innovative business organization are transforming the economic and social landscape of the advanced industrial countries. The policy issues associated with this transformation pose fundamental philosophical and political questions of how to organize our society. The course will explore the literature on the political economy of the Internet to determine what policy choices—hence which political debates—are and will be most important. We also will examine the consequences of the Internet for political and economic relations.

201E. Institutions for Economic and Political Competition. (4) Three hours of seminar per week. This seminar compares alternative approaches to the institutional arrangements necessary for the management and competition in the advanced countries. Debates in political economy, sociology, and the economics of organization show that industrial democracies are experimenting with new political and economic forms by which they govern themselves and coordinate economic activity. Comparative analysis shows that a range of governance mechanisms—networks, associations, regions, and federal systems of coordination—are evolving along these different arrangements. These different arrangements are complex and
The creation, maintenance, case studies of leaders of politics, public and private resources on which they draw for getting their decisions promulgated and implemented, the strategies they employ for building and maintaining their authority, and the criteria employed by scholars for evaluating leaders' effectiveness. Students will read and discuss case studies of leaders of politics, public and private organizations, and social movements.

Political Leadership. (4) Three hours of seminar per week. Graduate seminar. Open to students from all disciplines and colleges who are interested in the disciplined study of political leadership. The course examines conditions detrimental to political leadership and then delves into literature on agency versus structure ("what difference does leadership make?"). It examines the ways in which leaders typically make decisions, the resources necessary for them to achieve their goals, and the challenges they face. The course will also cover the role of national development in shaping political leadership. (F,SP)

Political Theory. (4) Three to four hours of seminar per week. Three hours of seminar per week. Themes to be specified by instructor.

Approaches to Contemporary Political Theory. (4) Three to four hours of seminar per week. An examination of the role of issues in contemporary political approaches to political theory. (SP,Brown)

Topics to Contemporary Political Theory. (4) Three to four hours of seminar per week. A seminar on leading topics in contemporary political theory. (SP,Bever)

Symposium in Contemporary Political Theory. (4) Three to four hours of seminar per week. An intensive examination of a contemporary political theorist, debate, or issue. (SP,Brown)

Politics and Culture. (4) Three hours of seminar per week. An examination of the role of politics in shaping culture, including politics and culture, normally with specific focus on American materials. Research papers will be written and discussed during the semester.

Colloquium in Political Theory. (4,4) Three hours of seminar per week. An interdisciplinary seminar on the nature of political theory and the enterprise of theorizing about politics, with attention to selected aspects of social science theory and contemporary philosophy.

Symposium in Political Theory. (4) Three hours of seminar per week. Forum for the presentation of original work in political theory.

International Relations

Theories of International Relations. (4) Three hours of seminar per week. Prerequisites: Previous work in international relations. Origin, application and utility of major concepts featured in the study of international relations. Three to four hours of seminar per week. Prerequisites: Consent of instructor.

Symposium in International Relations. (4) Three hours of seminar per week. Prerequisites: Consent of instructor. See departmental announcements. Topic will vary with instructor.

Selected Topics in International Relations. (4) Course may be repeated for credit with different topic and consent of instructor. Three hours of seminar per week. Prerequisites: Consent of instructor. See departmental announcements. Topic will vary with instructor.

History of Political Thought: Ancient and Medieval. (4) Three to four hours of seminar per week. A weekly seminar on political thought from the ancient Greeks to the Renaissance. Ancient and medieval political theorists, typically including Plato, Aristotle, St. Augustine, and Aquinas. (SP,Stimson)

History of Political Thought: Early Modern (Renaissance to French Revolution). (4) Three to four hours of seminar per week. A weekly seminar on political thought from the sixteenth century to the French Revolution. Early modern political theorists, typically including Machiavelli, Hobbes, Locke, Rousseau, and Burke. (SP,Brown)

History of Political Thought: Modern (French Revolution to World War I). (4) Three to four hours of seminar per week. A weekly seminar on political thought in the 19th and early 20th centuries. Modern political theorists, typically including Tocqueville, Hegel, Marx, Mill, Nietzsche, and Weber. (SP,Brown)

Methodological Topics in the History of Political Thought. (4) Three to four hours of seminar per week. A weekly seminar on political thought in the 19th and early 20th centuries. Modern political theorists, typically including Tocqueville, Hegel, Marx, Mill, Nietzsche, and Weber. (SP,Bever)

Empirical Theory and Quantitative Methods

Quantitative Analysis in Political Research. (4) Three hours of seminar per week. Prerequisites: 132A-132B or Statistics 130A. An introduction to the analysis of political data. (SP,Brown)

Quantitative Analysis in Political Research. (4) Three hours of seminar per week. Prerequisites: 231A. An introduction to modeling and introductory econometrics, with special emphasis on procedures appropriate for political data, including survey data.

Quantitative Analysis in Political Research. (4,4) Three hours of seminar per week. Formerly 232. A. Mathematical models of politics with applications to political learning, bargaining, and democratic theory. Three to four hours of discussion per week. Mathematics 105 or consent of instructor.

Psychometric and Econometric Methods. (4) Three hours of seminar per week. Prerequisites: 132A-132B or Statistics 130A. An introduction to quantitative analysis, with special emphasis on survey data. (SP,Brown)

The Empirical Analysis of International Security. (4) Four hours of lecture per week. This course offers an introduction to the empirical analysis of international security. The primary goals are 1) to acquaint students with the empirical knowledge in the field of International Security that has been produced with quantitative approaches, and 2) to help students develop the skills necessary to interpret and evaluate international research. Therefore, particular emphasis will be given to the need to go beyond being "consumers" of empirical research and how to become "producers" of novel empirical knowledge. (SP,Brown)

Empirical Analysis of International Security. (4) Four hours of seminar per week. Prerequisites: Consent of instructor. See departmental announcements. Topic will vary with instructor.

225A. The Empirical Analysis of International Security. (4) Four hours of lecture per week. This course offers an introduction to the empirical analysis of international security. The primary goals are 1) to acquaint students with the empirical knowledge in the field of International Security that has been produced with quantitative approaches, and 2) to help students develop the skills necessary to interpret and evaluate international research. Therefore, particular emphasis will be given to the need to go beyond being "consumers" of empirical research and how to become "producers" of novel empirical knowledge. (SP,Brown)

International Security. (4) Three hours of seminar per week. Prerequisites: Introductory course in economics or consent of instructor. An examination of international relations, foreign policy, international organizations and political economy. The creation, maintenance, transformation, and decay of international arrangements designed to manage or regulate interstate activities relating to trade, money, resource use, technology, and physical environment.
Area Studies

241D. Politics in the Post-Communist World. (4) Two hours of seminar per week. Reading and discussion seminar for graduate students. Comparative analysis of divergent paths of development among the almost 30 new states that formerly comprised the Soviet Union and Eastern Europe. Focus on changes in politics, economics, social stratification, culture, and international relations. Discussions of competing explanations of observed patterns, and applications for theories of development, modernization, and international relations.

242. Topics in Middle East Politics. (4) Three hours of seminar per week. Prerequisites: 142A or 142B or consent of instructor. An advanced seminar, designed to encourage the development of empirical research on the Middle Eastern phenomenon. Focused each year on a specific dimension of Middle East politics (state formation, local politics, sectarianism, Islamic political thought, etc.). A seminar paper and class presentations are required.

243A. International Relations in East Asia. (4) Three hours of seminar per week. This reading seminar will focus on dynamic interactions of four major powers—the United States, former Soviet Union, China, and Japan, which are also global powers—and two minor actors, North Korea—from bilateral, regional, and global perspectives. Lee

243B. Political Authority and Economic Exchange in East Asia. (4) Three hours of seminar per week. This course will compare how authority and exchange relations are combined to regulate political and economic activities in China, Taiwan, South Korea, North Korea, and Japan. The course will examine theoretical literature on state-society relations, market, world system, late development, as well as empirical case studies dealing with each nation covered.

243C. Japanese Politics. (4) Three hours of seminar per week. Japanese domestic politics—issues in historical development; political bureaucratic and legal structures; studies in economic policymaking.

244. Analysis of Contemporary China. (4) Three hours of seminar per week. This is the first in a two-semester sequence designed to provide the incoming graduate student with a basic grounding in the politics of contemporary China. The focus will be on wide reading and comprehension of the available analytical literature; its sequel will be devoted to integrating that reading with primary source research materials. There are no prerequisites, though undergraduate course work in Chinese politics and/or some acquaintance with the Chinese language would be useful.

244B. Analysis of Contemporary China. (4) Three hours of seminar per week. This second semester course will provide an overview of traditional bibliographic history of primary sources and the application research skills. The seminar is chronologically divided into three sections: 1) Two weeks on the problems of conceptualization and methodology; 2) Four weeks on reading and analyzing primary materials from the recent period of “socialist reform”; and 3) A final period of oral reports on student research topics.

244C. Approaches to Chinese Politics. (4) Two hours of seminar per week with an additional hour to be arranged with instructor. This course will have three main objectives: to expose students to debates in the study of post-1949 Chinese politics; to consider how research on contemporary China both draws from and informs comparative research; and to explore characteristics of the Chinese state and state-society relations. Emphasis on questions such as: What can we learn by examining Chinese culture and institutions? Do concepts such as fragmented authoritarianism, neotraditionalism, “state-society,” civil society, and corporatism produce insights into the structure and dynamics of Chinese politics?

244D. Collective Action in China. (4) Two hours of seminar per week with an additional hour to be arranged with instructor. This course will explore contentious politics in the People’s Republic of China. Special attention to the current era and dissent by peasants, migrants, workers, religious groups, women, students, artists, and dissidents. How do concepts drawn from social movement theory help us understand popular activism? What are the consequences of protest for regime stability and the development of a more competent state? The seminar will cover South Asian and Eastern European models as well as the People’s Republic of China.

245A. South Asian Politics. (4) Three hours of seminar per week. Major themes of politics and international relations in India, Pakistan, Burma, and the mountain kingdoms.

245C. Comparative Politics in Asia. (4) Three hours of lecture per week. Comparative politics has tended to neglect Asia, the most economically vital region of the globe, while Asian studies has tended to be based fundamentally on an area studies approach cum single-country monographic analyses. This seminar attempts to look at Asian politics from a comparative perspective. Course requirements focus on intensive and extensive readings, including both the seminal works and the literature on Asian politics.

246. African Politics. (4) Three hours of seminar per week. Politics of Sub-Saharan Africa; relations of state and society in the context of weak states; state building; societal pluralism; the political role of ethnicity; crisis states and proto-national states; ethnic states; oppression and retribution; conflict and class formation; political order and development; modernization and identity; and interstate conflict and international order.

247B. Western European Politics. (4) Three hours of seminar per week. Major themes of politics and international relations of Western Europe.

247C. German Politics. (4) Three hours of seminar per week. Prerequisites: Consent of instructor. The seminar provides a general overview of modern German political development in the context of Central European history, and detailed analyses of selected topics. Sperlich

247G. The Comparative Politics of the Welfare State. (4) Three hours of lecture per week. This course analyzes the politics of social protection in Western Europe. After describing different national welfare regimes, we turn to contemporary challenges, notably globalization, persistent poverty, and changes in family forms and gender roles. We also look at the politics of welfare retraction and adjustment, paying particular attention to the prospects for progressive social policy. Must re-form inevitably scale back protections for the weak and vulnerable, or can equity be safeguarded while promoting efficiency? Bichler

248A. Latin American Politics. (4) Either part of the 248A-248B sequence may be taken separately for credit. Three hours of seminar per week. Explores different analytical approaches to Latin American politics, focusing both on major concepts (clientelism, corporatism, the state-society relation) and different explanatory approaches (focusing on factors such as dependency and imperialism, internal social order and economic change, political structure and institutions and political culture).

249. Special Topics in Area Studies. Four hours of lecture per week. See department web site for specific course offerings. (F,SP) Staff

Public Law and Jurisprudence

252. Legal Theory and Institutions. (4) Three hours of seminar per week. The organization and behavior of legal institutions, with particular reference to American courts and administrative agencies. Institutional theory, interpretations of legality, legitimacy, policy choice, and the organization of enforcement and decision-making processes. Readings include empirical studies, judicial opinions, jurisprudential writings and organizational theory.

259. Selected Topics in Public Law. (4) Course may be repeated for credit as topic varies. Three hours of seminar per week. Prerequisites: Consent of instructor. See departmental announcements. Topic will vary with instructor.

Political Behavior

261. Political Behavior. (4) Three hours of seminar per week. A comprehensive review of the major topics in political behavior through intensive examination of the theories, findings, and proceedings of the most significant studies in the field.

262. Voting Behavior and Public Opinion. (4) Three hours of seminar per week. Examination of the basic literature on American voting behavior, public opinion and student research on individually selected topics in this field.

269. Selected Topics in Political Behavior. (4) Course may be repeated for credit as topic varies. Three hours of seminar per week. Prerequisites: Consent of instructor. See departmental announcements. Topic will vary with instructor.

American Government and Politics

271A-271B. American Government. (4;4) Three hours of seminar per week. Credit and grade to be awarded on completion of sequence. The principal topics in American national politics, including public opinion, elections, parties, interest groups, Congress, the presidency, the bureaucracy, and policy information.

272A-272B. National Policy Making. (4;4) Three hours of seminar per week. Course may be repeated for credit as topic varies. Formerly 272. National policy-making processes, concentration on congress, the Presidency, and interactions among policy-making institutions.

273. Urban Politics. (4) Three hours of seminar per week. Credit and grade to be awarded on completion of sequence. The principal topics in American national politics, including public opinion, elections, parties, interest groups, Congress, the presidency, the bureaucracy, and policy information.

274. American Political Development. (4) Three hours of seminar per week. The goal of this course is to explore, discuss, and better understand the relationship between perceptions of racial identity, attributions of racial difference, and political behavior, broadly defined. It focuses on recent and contemporaneous intersections of race, immigration, and identity politics in the U.S. While much of the readings come from quantitative studies of political behavior, credit is expected to grapple enthusiastically with parallel debates in philosophy, psychol- ogy, sociology, economics, and history. (F,SP) Lee, Taeku

277. Political Regulation. (4) Three hours of seminar per week. This course looks at political regulation and regulation issues from both a theoretical and policy perspective. Topics include campaign finance reform, lobbying regulations, bribery, voter franchise restrictions, redistricting, term limitations, direct democracy, political fairness, and the design of electoral institutions.

279. Selected Topics in American Government. (4) Course may be repeated for credit as topic varies. Three hours of seminar per week. Prerequisites: Consent of instructor. See departmental announcements. Topic will vary with instructor.

Public Organization, Administration, and Policy

280A. Public Organization Theory. (4) Three hours of seminar per week. A survey of the literature of or- ganization and management theory, emphasizing the
Special Studies

290. Dissertation Research. (4) Course may be repeated for credit. Three hours of seminar per week. Must be taken on a satisfactory/unsatisfactory basis. Seminar to aid students in initiating, carrying out, and completing dissertation research. Problems of planning dissertation research, preparation of research design proposals and suggestions for outside funding, field work, and writing and presenting the results of completed research. Presentations by graduate students working on their dissertations.

292. Directed Advanced Study. (2-12) Course may be repeated for credit. Must be taken on a satisfactory/unsatisfactory basis. Open to qualified graduate students wishing to pursue special study and research under direction of a member of the staff. (F,SP)

296. Directed Dissertation Research. (4) Course may be repeated for credit. Must be taken on a satisfactory/unsatisfactory basis. Open to qualified students advanced to candidacy for the Ph.D. degree.

299. Independent Study in Preparation for the M.A. degree. (2) Credit to be awarded on completion of 120 hours of supervised study in the major field of study. May be repeated for credit. By arrangement with faculty. Must be taken on a satisfactory/unsatisfactory basis. Open to students engaged in supervised research programs in any field of the Department.

Professional Courses

311. Graduate Student Instructor Training Seminar. (2) Course may be repeated for credit. Two hours of seminar per week. Must be taken on a satisfactory/unsatisfactory basis. This course is intended for all new graduate student instructors (GSI) in the Department of Political Science, and is meant to be taken simultaneously with the first semester of teaching as a GSI. The course functions as a participatory workshop. Although this class is intended for first-time GSIs, it is not a course in “how to be a GS,” but rather, how to be an effective political science teacher, now and at later steps in professional careers. Workshop time will be divided among presentations by the instructor, discussion of required readings, and discussion of weekly assignments in relation to challenges encountered by GSIs in the course of their teaching. (F,SP)
Department Overview

Psychology represents an extremely broad discipline, ranging from the study of behavior of the simplest of organisms to the behavior of humans and groups of humans. The program at Berkeley attempts to give basic and well-rounded coverage of most of the principal fields of psychology. Areas covered include social, developmental, behavioral neuroscience, comparative, individual, and clinical, and cognitive psychology (learning, human and animal); perception; personality; and psycholinguistics. The fact that psychology is so diverse means, however, that all areas of study cannot be represented within the expertise of primary interest of a single faculty or department. The emphasis at Berkeley is upon empirical research and theoretical analysis of fundamental aspects of animal and human behavior. Since it is our experience that those interested in the major often have been exposed to introductory courses with emphases different from ours, we strongly urge prospective majors to examine our upper division course offerings closely to see if they are consonant with students’ interests.

The major serves three purposes: 1) For the liberal arts student, the study of psychology provides an avenue for increased self-understanding and insight into the behavior of others. The objective study of behavior is one of the major themes of intellectual history of the last hundred years. 2) For students preparing for training in such professions as medicine, law, education, and business, psychology provides important basic knowledge and principles. Students planning on graduate work in psychology, the undergraduate major seeks to establish a sound foundation.

The Major Program

The primary goal of the major is to ensure that the student becomes aware of the diversity within the discipline and of the interrelationships among the different sub-areas of psychology. The major consists of 1) a set of prerequisite courses; 2) a course in research methods and design (101); 3) three “development” courses (or four if elected as part of the “research” requirement); 4) four elective courses. The areas of psychology (cognition, brain and behavior; developmental; clinical; and social/personality) must be included in the courses used for the “research” and elective courses. Only one seminar may be used.

Lower Division Requirements

Admission to the Major. Psychology is a popular major and for several years has not been able to accommodate all students who want to declare it. Students will be admitted to the major in October and in May. Criteria for admission include 1) completion of the prerequisite courses by the end of the semester; and 2) a grade-point average of 3.2 in the prerequisite courses. Students who do not meet the criteria may apply, but their admission to the program is very unlikely.

Pre-Major Students. Students who intend to declare the psychology major are urged to visit the Student Services Office periodically each semester to obtain departmental literature and the “Tolman Tribune” and to review the undergraduate bulletin boards for current information. Pre-majors are encouraged to become involved in departmental student activities and events. The advising staff is available to provide advice, guidance, and peer discussion.

Prerequisite Areas, Courses, and Options. Psychology: Psychology 1 (AP Psychology units will satisfy this prerequisite provided the score was at least 3).

Evolution: One course from Molecular and Cell Biology 41 or 41X; Anthropology 1; Integrative Biology 35AC.

Biological Science: Two courses from Molecular and Cell Biology 32, 61, 64; Biology 1A, 1B, 11; Integrative Biology 83ABC (AP Biology Units will satisfy this prerequisite provided the score was a 4 or 5).

Social Science: Two courses from Anthropology 3, 3AC; Sociology 3, 3AC; Linguistics 5; Political Science 1 or 2.

Quantitative: One course from Statistics 2, 20, or 21; Math 54 or 55 (AP Statistics units will satisfy this prerequisite).

Prerequisite courses must be taken on a letter-grade basis (H195A-H195B is offered only on a Passed/Not Passed basis). No course to be counted toward completion of the upper division major requirements may be taken on a Passed/Not Passed basis except 199/198.

Upper Division Requirements

Research Design and Methods: Psychology 101. All four areas (cognition, brain and behavior; development; clinical; and social/personality) of psychology must be included in the following courses:

Breath: Three “decade” courses (110, 120, 130, 140, 150, 160, 180).

Electives: 12 units of additional courses. These may be decade or non-decade courses. Only one 160 or 198 or 199 course of at least 3 units may be used in satisfaction of the major.

Total Units: 25 upper division units in psychology.

Honors Program. Admission to the honors program is limited to senior psychology majors with a 3.5 grade-point average overall and in upper division psychology courses. Students complete Psychology H194A-H194B (Honors Seminar) and Psychology H195A-H195B (Honors Project). Evaluation of the thesis is the responsibility of, first, the faculty supervisor and then of the departmental committee on undergraduate honors. It is the responsibility of the latter group to decide on the level of honors to be awarded. Additional information can be found on the department web site at psychology.berkeley.edu or in the Student Services Office, 3305 Tolman Hall.

Graduate Study

Preparation. The Department of Psychology regards completion of an undergraduate major in psychology as the best preparation for graduate study. The undergraduate program should include a course in statistical methods and a laboratory in experimental psychology. The number of fully qualified applicants always greatly exceeds the number admitted; therefore, the prospective applicant who has little or no background in psychology is advised to defer application until appropriate undergraduate coursework has been completed.

Graduate Training Programs. The graduate program is designed for doctoral students interested in pursuing advanced study and conducting original research in psychology. New admissions are restricted to students who can be accepted for the fall semester only. Detailed information concerning admission, financial aid, and degree requirements is displayed on the department web page at psychology.berkeley.edu or in the department brochure. The brochure and admission application can be obtained by writing to the Student Services Office, Department of Psychology, Ph. B., Student Services Office, Berkeley, CA 94720-1652, or the application can be filled out online using the web site noted above.

Graduate training is organized around five major areas of study. Formal graduate training, including the selection and evaluation of students and the development and maintenance of training programs, is the primary responsibility of faculty members in the following areas: behavioral neuroscience, clinical, cognitive, developmental, and social/personality. The core of each training program is a set of seminar courses. These courses are designated as “decade” courses (i.e., 200, 210, 220, etc.) and are offered every other year. They are intended to provide the core content necessary for a student to become an effective scholar and researcher in the area of specialization. Students are expected to affiliate to one of the core programs and to complete the core sequence for that area. Depending upon the area, additional course requirements might consist of: 1) courses on research methodology, experimental design, and statistical analysis; 2) courses selected from other areas either within or outside of the Psychology Department; 3) advanced courses and seminars in the area of specialization; and 4) individual study and research (298 and 299). Most programs require a major research or theoretical paper by the end of the second year of graduate study. All students are required to serve at least two semesters as a graduate student instructor in order to be eligible for the Ph.D. degree. The final requirements of all programs consist of the successful passing of the Ph.D. examination usually during the third year, and the submission and approval of the dissertation.

General Psychology

Further Information. The online Schedule of Classes provides details for each independent and departmental course offering. For the most up-to-date information, or if a course was not offered the previous semester, please consult the current catalog or contact the Psychology Department for the most current offerings.

Lower Division Courses

1. General Psychology. (3) Students will not receive credit for 1 after taking 2. Two hours of lecture and one hour of discussion per week. Introduction to the principal areas, problems, and concepts of psychology. This course is required for students preparing for training in such professions as medicine, law, education, and business. Psychology 101.

2. Principles of Psychology. (3) Students will not receive credit for 2 after taking 1. Three hours of lecture per week. An overview of psychology for students who will not major in the field. This course satisfies the prerequisite for upper division decade courses. Psychology 101.

14. Psychology of Gender. (3) Three hours of lecture per week. Examination of various factors in the development of feminine and masculine roles, including personality, social processes, biology, and culture. Psychology 101.

24. Freshman Seminars. (1) Course may be repeated for credit as topic varies. One hour of seminar per week. Sections 3-4 to be graded on a passed/not passed basis. The Berkeley Seminar Program has been designed to provide new students with the opportunity to explore an intellectual topic with a faculty member in a small-seminar setting. Berkeley Seminars are offered in all campus departments, and topics vary from department to department and semester to semester.

39. Freshman/Sophomore Seminar. Course may be repeated for credit as topic varies. Seminar format. Sections 1-2 to be graded on a letter-grade basis. Sections 3-4 to be graded on a passed/not passed basis. The Berkeley Seminar Program has been designed to provide new students with the opportunity to explore an intellectual topic with a faculty member in a small-seminar setting. Berkeley Seminars are offered in all campus departments, and topics vary from department to department and semester to semester.

45. Freshman Seminars. (1) Two hours of seminar per week. Must be taken on a passed/not passed basis. Sections 1-2 to be graded on a letter-grade basis. Sections 3-4 to be graded on a passed/not passed basis. The Berkeley Seminar Program has been designed to provide new students with the opportunity to explore an intellectual topic with a faculty member in a small-seminar setting. Berkeley Seminars are offered in all campus departments, and topics vary from department to department and semester to semester.

Elliot Turiel (Education)
David Wessell (Music)
ogy. Students are expected to read an article each week and actively participate in the discussion with the speaker. (F)

84. Sophomore Seminar, (1,2) Course may be repeated for credit as topic varies. One hour of seminar per week for 15 weeks. One semester or less of hours of seminar per week per unit for 10 weeks. Two hours of seminar per week per unit for eight weeks. Three hours of seminar per week per unit for five weeks. Sections 1-2 to be graded on a pass/no pass basis. Sections 3-4 to be graded on a letter grade basis. Prerequisites: At discretion of instructor. Sophomore seminars are small interactive courses offered by faculty members in departments all across the campus. This is an excellent opportunity for close, regular intellectual contact between faculty members and students in the crucial second year. The topics vary from department to department and semester to semester. Enrollment limited to 15 sophomores.

85. Supervised Group Study, (1-3) Course may be repeated for credit. One to three hours of directed group study per week. Must be taken on a pass/no pass basis. Group study of selected topics. Enrollment restricted. See Introduction to Courses and Curriculum section of this catalog. (F,SP)

86. Supervised Independent Study and Research, (1-3) Course may be repeated for credit. Must be taken on a pass/no pass basis. Prerequisites: 1 or consent of instructor and 3.4 GPA or higher. Intended for freshmen and sophomores who wish to undertake an independent or individual inquiry on a topic in psychology. (F,SP)

Upper Division Courses

Psychology 1 is prerequisite for all upper division courses. Certain courses have additional requirements or are stated for certain courses.

101. Research and Data Analysis in Psychology. (4) Three hours of lecture and two hours of laboratory per week. Prerequisites: 1 and completion of the prerequisite for the major. The course will concentrate on hypothesis formulation and testing, tests of significance, analysis of variance (one-way analysis), simple correlation, simple regression, and nonparametric statistics such as chi-square and Mann-Whitney U tests. Majors intending to be in the honors program must complete 101 by the end of their junior year. (F,SP)

C104. Perspectives on the Young Child in Society. (3) Two hours of lecture and one hour of discussion per week. Prerequisites: 110 (Social Welfare majors). This course provides a multidisciplinary approach to understanding the needs of children from birth to age 5 in the context of the varied social institutions in which they are cared for and educated. Specific attention will be focused on how children’s experiences differ beyond their families vary by social class, ethnicity and language, family needs and preferences, and special needs. Students will examine how expectations for young children change over time and will become familiar with current and past policy debates about the education and social well-being of young children. Also listed as Education C116A and Social Welfare C128. (F,SP) Berrink, Whitebook

C105. Psychology of African American People: Current Issues. (3) Three hours of lecture per week. Prerequisites: Africam 5B or 101A, or upper division course in Africam studies. A discussion of psychological research and theory pertaining to African American people. Emphasis on understanding the concerns, methods and conclusions regarding African Americans offered by American psychology from its origins to the present. Also listed as African American Studies C132.

106. Psychology of Dreams. (3) Two hours of lecture and one hour of discussion per week. Dreaming is a necessary, universal nightly activity of the human mind and brain. This class will cover some of the major psychological theories, interpretations, and uses that have been made of dreams. Students will be encouraged to keep dream diaries to provide an experiential component to the class and so that they may apply the class topics and do research using the material they generate themselves.

107. Buddhist Psychology. (3) Two hours of lecture and one hour of discussion per week. Based on tradition of direct observation of working of ordinary mind in everyday situations with the intention of getting people to present to theories of cognition, perception, motivation, emotion, social interaction, and neurosis.

109. History of Psychology. (3) Two hours of lecture and one hour of discussion per week. Prerequisites: 101 or consent of instructor. Development of scientific study of human and animal behavior. Consideration of history of particular subject areas—such as biocytology, comparative, developmental, personality, and social psychology—as well as general trends.

Biological Psychology

110. Introduction to Biological Psychology. (3) Two hours of lecture and one hour of discussion per week. Prerequisites: 1 and biological prerequisites for the major or consent of instructor. Survey of relations between behavioral and biological processes. Topics include simple correlation, simple regression, and nonparametric analysis of variance (one-way analysis), and one hour of discussion per week. Based on survey of aspects of visual perception (adaptation, brightness and color vision, binocular vision, object detection) in relation to anatomy and physiology of the visual system.

C113. Biological Clocks: Physiology and Behavior. (3) Two hours of lecture and one hour of discussion per week. Prerequisites: Completion of biological prerequisites for the major and one of the following: 110 or a course in animal organisinal physiology (Integrative Biology 132, 140, 148, or Molecular and Cell Biology 160). A consideration of the biological clocks that generate daily, lunar, seasonal and annual rhythms in various animals including people. Emphasis will be placed on the nature, implications and limitations to the adaptive significance of estrous cycles, feeding rhythms, sleep-wakefulness cycles, reproductive and hibernation cycles, body weight and migratory cycles. Also listed as Integrative Biology C143B.

114. Biology of Learning and Neural Plasticity. (3) Two hours of lecture and one hour of discussion per week. Prerequisites: 110 or consent of the instructor. A study of theoretical and experimental investigations of the biological substrates of learning, memory and forms of neural plasticity related to the growth and maturation of the nervous system.

115A. Introduction to Comparative Psychology. (3) Two hours of lecture and one hour of discussion per week. Prerequisites: 110. Studies of animal behavior in evolutionary perspective, including analysis of behavior development, reproduction, aggression, territoriality.

C115B. Animal Behavior. (4) Students will receive no credit for C115B after taking Integrative Biology 146 or Integrative Biology 146L. Three hours of lecture and one hour of discussion per week. Formally 115B. An introduction to the study of animal behavior in an evolutionary context. Topics covered include the genetic, physiological, ecological, and cognitive bases for animal behavior. This course, which emphasizes conceptual understanding of basic behavioral principles, serves as a foundation for advanced topics in the field offered through Integrative Biology and Psychology. Three midterms and a cumulative final exam. Also listed as Integrative Biology C144. (F) Staff

C115C. Neuroethology. (3) Three hours of lecture and one hour of discussion per week. Prerequisites: C115B, Integrative Biology C144 or consent of instructor. The course will cover a range of topics that span the gap between the properties of individual molecules and complex cognitive behavior, including genetic, cellular, synaptic, circuit, pattern-generating circuits, sensory and motor integration, sensory processing, escape responses, animal communication, and learning.

C116. Hormones and Behavior. (3) Two hours of lecture and one hour of discussion per week. Prerequisites: Completion of biological prerequisites for the major or consent of instructor. The study of human and animal physiology recommended. This course provides a comprehensive overview of behavioral endocrinology beginning with hormone production and actions on target tissues and continuing with an exploration of a variety of behaviors and their hormonal regulation/sequences. The course uses a comparative approach to examine the reciprocal interactions between the neuroendocrine system and behavior, considering the effects of hormone on development and adult behavior in addition to how behavior regulates endocrine physiology. While much of the course focuses on non-human vertebrates, the relevance to humans is explored where appropriate. Topics include sexual differentiation and sex differences in behavior, reproductive, parental, and aggressiveness behaviors, and hormonal and behavioral homeostatic regulation. Also listed as Integrative Biology C143B.

117. Human Neuropsychology. (3) Two hours of lecture and one hour of discussion per week. Prerequisites: 110. A survey of contemporary psychological approaches to problems of human disabilities including mental disorders, behavior changes following human brain injury and disease, and mental subnormality. Emphasis on nervous system models of these problems and areas of potential application of basic research development.

118. Topical Seminar in Biological Psychology. (3) Course may be repeated for credit with different topic and consent of instructor. Three hours of seminar per week. Prerequisites: Consent of instructor. For a precise schedule of courses, check with the Student Services Office each semester.

119. Drugs and Behavior. (3) Students will receive no credit for 119 after taking Letters and Science 19 or Molecular and Cell Biology 62. Two hours of lecture and one hour of discussion per week. Prerequisites: 110 or consent of instructor. A survey course exploring the physical and psychological effects of psychoactive drugs. The major focus of the course is on the relationship between behavior and the physiological actions of drugs. Emphasis will be placed on effects of pharmacological agents on complex mental processes such as attention, motivation, learning, and memory.

Cognitive Psychology

C120. Basic Issues in Cognition. (3) Students will receive no credit for C120 after taking Cognitive Science 21. Two hours of lecture and one hour of discussion per week. Theoretical foundations and current controversies in cognitive science will be discussed. Basic issues in cognition—in particular, memory and attention—will be covered. Specific topics include learning and memory, sensory processes, navigation and migration, communication, and cross-species comparisons of behavior. Materials will be drawn from the psychology, cognitive science, computer science, and neuroscience literatures. Emphasis will be placed on the nature, implications, and limitations of the computational model of mind. Also listed as Cognitive Science C100. (F)

121. Animal Cognition. (3) Two hours of lecture and one hour of discussion per week. Prerequisites: 115B or consent of instructor. This course focuses on how animals process, organize, communicate, and remember information. Specific topics include learning and memory, sensory processes, navigation and migration, communication, and cross-species comparisons of behavior. Materials will be drawn from the psychology, cognitive, behavioral, and, to a lesser extent, the neuropsychological literatures.

122. Introduction to Human Learning and Memory. (3) Two hours of lecture and one hour of discussion per week. Prerequisites: 110. An introduction to the study of human memory. Topics covered include the nature of memory retrieval processes; transfer and interference; encoding and retrieval processes; transfer and interference; mechanisms of forgetting.

C123. Computational Models of Cognition. (4) Three hours of lecture and one hour of discussion per week. Prerequisites: Calculus, discrete mathematics, Cognitive Science C1, Computer Science 61A, or equivalents. This course will provide advanced stu-
C124. Psycholinguistics. (3) Two hours of lecture and one hour of discussion per week. Prerequisites: An introductory course in linguistics or consent of instructor. Introduction to psycholinguistics, emphasizing effects of psychological variables on the learning and use of language, influence of language behavior on psychological processes; special attention to psycholinguistic applications of modern linguistic theory and to social psychological aspects of language behavior. Also listed as Cognitive Science C124.

C126. Perception. (3) Two hours of lecture and one hour of discussion per week. Prerequisites: Consent of instructor. 101 recommended. An introduction to principal theoretical constructs and experimental procedures in visual and auditory perception. Topics will include: psychophysics; perception of color, space, shape, and motion; pattern recognition and perceptual attributes in visual and auditory perception. Topics will also include: psychophysics; perception of color, space, shape, and motion; pattern recognition and perceptual attributes in visual and auditory perception. Topics will also include: psychophysics; perception of color, space, shape, and motion; pattern recognition and perceptual attributes in visual and auditory perception. Topics will also include: psychophysics; perception of color, space, shape, and motion; pattern recognition and perceptual attributes in visual and auditory perception. 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chological mechanisms that lead people to be biased against others. Recent research has begun to shed light on the psychological legacy of prejudice and stereotyping for their targets. This course will review the major contributions of each of these literatures, providing students with a broad understanding of both classic and current issues in the field. The course will be divided into three sections: bias (i.e., the perpetrator's perspective), stigma (i.e., the target's perspective), and intergroup relations. This course satisfies the American Cultures requirement. (F,SP)

168. Topical Seminars in Social Psychology. (3) Course may be repeated for credit with different topic and consent of instructor. Three hours of seminar per week. Prerequisites: Consent of instructor. Students are expected to attend all scheduled classes in order to participate in the discussion with the speaker. (F,SP)

199. Supervised Independent Study and Research. (1-3) Course may be repeated for credit. Individual conferences. Must be taken on a passed/not passed basis. Progress and the decision of the instructor. Enrollment is restricted by regulations of the Berkeley Division listed elsewhere in this catalog. (F,SP)

Graduate Courses

Graduate standing and the consent of the instructor are prerequisites for all graduate offerings. (Undergraduates may enroll only upon approval of a faculty adviser and consent of the instructor.) Courses beginning each decade are designated to provide a pro-sequence and are designed to provide the background essential for students planning to concentrate in that area of specialization. These pro-seminars are sufficiently general, however, for students from other areas to obtain breadth of training in complementary areas of study. (Most pro-seminars are self-contained and may be taken separately. For most, the sequence is not critical. See instructor before enrolling.) Students from other areas do not hold to enroll in these courses, since they are designed primarily for first- and second-year graduate students in psychology.

Quantitative Psychology

C204. Research Reviews in Animal Behavior: Behavior Review. (1) Course may be repeated for credit. Three hours of lecture per week. Prerequisites: Consent of instructor. This course will discuss current publications in animal behavior. A student will summarize a paper and lead the discussion that follows. Occasionally, the group reviews a manuscript in preparation, or a thesis proposal. Not all participants need report, but all are expected to attend and enter into the discussions. Guest lecturers are invited each semester. Also listed as Integrative Biology C204 and Environ Sci, Policy, and Management C204. (F,SP)

205A-205B. Data Analysis. (3.5) Three hours of lecture and two hours of discussion/laboratory per week. Prerequisites: Consent of instructor. This course will include disparity, motion, texture, shading, and occlusion. Introduction to the psychophysics and mathematical analysis underlying the inference of 3D scene properties from 2D retinal images. Psychophysics of various cues to 3D shape and spatial layout such as texture, contour, shading, stereopsis, and structure from motion. Geometrical analysis of these cues. Probabilistic theory for optimal combination of cues and estimation of scene properties. Relevant physiology of V1, V2, V4, and higher areas. Also listed as Computer Science C293B, Vision Science C290B, and Molecular and Cell Biology C264B.

C215C. Vision C: Perceptual Organization. (2) Three hours of lecture per week for seven and one-half weeks. Prerequisites: Consent of instructor. This course will cover "mid-level" visual processing, including the perception of objects, their properties, and the determination of part-whole structure from optical images. The approach will be interdisciplinary, including material from psychophysics, classical perceptual psychology, computational modeling, and neuroscience. Specific topics include perception of color, grouping, figure-ground organization, model alignment and part-whole structure. Also listed as Molecular and Cell Biology C264C, Vision Science C290C, and Computer Science C293C.

C215D. Vision D: High-Level Vision. (2) Three hours of lecture per week for seven and one-half weeks. Prerequisites: Consent of instructor. This course will cover "high-level" visual processing, including object recognition, visual attention, visual memory, visual imagery, and visual awareness. The approach will be interdisciplinary, including material from psychophysics, classical perceptual psychology, computational modeling and neuroscience. Also listed as Molecular and Cell Biology C264D, Vision Science C290D, and Computer Science C293D.

C215L. Vision Laboratory: Quantitative, Perceptual, and Physiological Aspects. (1) Course may be repeated for credit. One hour of laboratory per week for seven and one-half weeks. Prerequisites: Consent of instructor. Quantitative analysis of psychological processes such as spatial, color, temporal and binocular vision, motion sensitivity and adaptation and their underlying physiological mechanisms. Also listed as Computer Science C293L, Vision Science C290L, and Molecular and Cell Biology C264L.

Cognitive Psychology

222. Consciousness. (3) Three hours of lecture per week. Formerly 220B. Survey of psychological, philo-
sophorical, and neuroscientific approaches to con- 
Automatization. Explicit-implicit dissociations in memory, 
perception, and thought. Implicit emotion and motivation. 
Meditative states. Consciousness in nonhuman ani- 
mal and computing machines.

C223. Proseminar: Problem Solving and Under- 
standing. (3) Three hours of lecture per week. Pre- 
requisite: Consent of instructor. Formerly C220D. Stu- 
dents will examine problem solving in children and 
adults, from a predominantly cognitive science per- 
spective, beginning with an examination of thinking in- 
volving basic knowledge. Students will then ana-
lyze the literature concerning cognitive issues that 
transcend problem types, including representation, “un-
derstanding,” access and availability of knowledge, ac-
certainty, deductive reasoning, categorization, 
the architecture of knowledge, and the control of cog-
nition. Also listed as Education C229A.

224. Judgment and Decision Making. (3) Three 
hours of lecture per week. Formerly 220G. This course 
will examine how people make judgments, choices, 
decisions, and evaluations. Descriptive models will be 
compared to rational models of beliefs and actions. 
Topics will include probability, assessment, attitudes 
toward risk, multi-attribute judgment, contextual 
effects, and theories of prediction and choice.

225. Concepts and Categories. (3) Three hours of 
lecture per week. Formerly 220H. This seminar will 
look at some of the basic issues in categorization that 
have been the focus of psychological research: the 
classical view of categories (defining features) versus 
grouping features; the idea of basic categories 
(with its proliferation of implications); categori-
ization and life events; personality trait designations 
as categories; categories viewed as theories; devel-
opmental and cognitive mechanisms; the relation-
ship between categorization and language.

229. Cognition, Brain, and Behavior Colloquium. 
(1) Course may be repeated for credit. One and one-
half hours of colloquium per week. Must be taken on 
a satisfactory/unsatisfactory basis. Prerequisites: Grad-
uate standing or consent of instructor. Reports and dis-
cussions of original research in the area of cognitive 
psychology. Not all participants must report in any 
given semester, but all are expected to attend and to 
take part in the discussions. Required course for all 
students in the cognition, brain, and behavior graduate 
program.

Clinical Psychology

230A-230B. Proseminar: Clinical Psychology. (3-3) 
Three hours of lecture per week. Formerly 230. Ex-
amination of major theoretical and historical themes in 
the development of modern clinical psychology, with 
special attention to concepts of mental health and psy-
chopathology, personality, and social systems, in which 
student in clinical psychology or enrollment in limited 
student in clinical psychology or enrollment in limited 
Clinic during the second and third years of the clinical 
program. Required of all clinical psychology students. Required course for all students in the clinical graduate program. (F,SP)

231B. Clinical Neuropsychology. (3) Three hours of 
lecture per week. Formerly 231B. Theoretical and 
methodological approaches to the study of learning 
acquisition; focus on what learners acquire and the role 
of input in the process; review of phonology, syntax, 
and morphology. Introduction to language acquisition 
the origins and maintenance of normal and patholog-
ic aspects of attention and memory. Exploration of 
things, and cognitive neuroscience. Emphasis is given 
to the evolution of attention and memory. Exploration of the origins and development of knowledge in the domains of biology, physics, number, mind, lan-
guage, and morality.

240A. Proseminar: Biological, Cognitive, and Lan-
guage Development. (3) Three hours of lecture per 
week. Survey of the biology of the nervous system and 
behavior; the cellular interactions during development 
in animals and humans, including neurogenesis, 
morphology, with a focus on the role of input ver-
sciences. Required of all clinical psychology students or consent of instructor. Consultation, program evaluation, program development, and 
prevention in community settings. (F,SP)

240B. Proseminar: Emotional, Social, and Psycho-
pathological Development. (3) Three hours of lecture 
per week. Formerly 240C. Theory, research, and methods for studying the mechanisms and processes of cognitive development from infancy through childhood. Top-
ics include language, affect, social cognition, and moral development. Exploration of the origins and development of knowledge in the domains of biology, physics, number, mind, lan-
guage, and morality.

242. Cognitive Development. (3) Three hours of lec-
ture per week. Formerly 240A. Research, and methods for studying the mechanisms and processes of cognitive development from infancy through childhood. Top-
ics include memory, language, social cognition, and moral development. Exploration of the origins and development of knowledge in the domains of biology, physics, number, mind, lan-
guage, and morality.

243. Language Development. (3) Three hours of lecture 
per week. Formerly 240D. Theoretical and method-
ological approaches to the study of language acquisition. 
Topics include the acquisition of phonology, syntax, 
and morphology, with a focus on the role of input ver-
sus the innate endowment of the learner.

249. Developmental Seminar. (1) Course may be 
repeated for credit. One hour of seminar per week. 
Must be taken on a satisfactory/unsatis-
factory basis. Prerequisites: Graduate standing or con-
sent of instructor. Reports and discussions of original research in the area of cognitive psychology. Not all participants need report in any given semester, but all are expected to attend and to enter into the dis-
cussions. Required course for all students in the de-
graduate program. (F,SP)

Personality Psychology

250A. Perspectives in Personality: Overview. (3) 
Three hours of lecture per week. Introduces the per-
spectives and research programs of the personality 
faculty to graduate students in the program. Emphasis 
is placed on the integration of problems in social, per-
sonality, and clinical psychology with the concepts and 
principles employed in the study of nonsocial cognition. 
Required of all clinical psychology students. Required course for all students in the clinical graduate program. (F,SP)

250C. Proseminar: Social Cognition. (3) Three hours of 
lecture per week. Surveys empirical and theoretical 
research on topics relating to our understanding of 
memory, thought, and language concerning ourselves, 
other people, interpersonal behavior, and the situations 
in which social interaction takes place. Emphasis is 
placed on the integration of problems in social, per-
sonality, and clinical psychology with the concepts and 
principles employed in the study of nonsocial cognition. 
Required course for all students in the clinical graduate program. (F,SP)

250D. Principles and Pragmatics of Personality 
Measurement. (3) Three hours of lecture per week.
Methods of personality measurement and assessment, with particular attention to the qualities, attributes, talents and dispositions considered in the everyday evaluation of people make of self and others.

C250E. Perspectives in Personality: Personality Theory. (2) Two hours of seminar per week. Major approaches to personality theory, including psychodynamic, behavioral, psychometric, and humanistic theories. As well as work in culture and personality, the study of lifespan development and feminist psychology. Analysis of relationships among the various perspectives of personality development. The seminar participants will select actual topics for possible presentation. Required for all students in the graduate program. (F,SP)
Undergraduate Major in Public Health in the College of Letters and Science

The School of Public Health offers an undergraduate major through the College of Letters and Science. The goal of the major is to provide students with an interdisciplinary understanding of epidemiology, biostatistics, environmental health, health behavior, and health policy. These areas of emphasis range across the spectrum of natural science to social science. Students in the program will develop and apply knowledge from multiple disciplines for the promotion and protection of the health of the human population, giving due consideration to principles and human rights and cultural perspectives that abound in our multicultural country and world.

Lower Division Requirements

- Biological Science Requirement: Biology 1B (required before declaration: minimum letter grade, A- or higher)
- Chemistry—M.S., Ph.D.
- Environmental Health Sciences—M.S., M.S./Ph.D.
- Environmental Health Policy, concentration in one of the following areas: Epidemiology/biostatistics, environmental health sciences, epidemiology, infectious diseases, health and social behavior, maternal and child health, health policy and management, and public health nutrition. The Dr.P.H. curriculum is based on a comprehensive body of knowledge in the field of public health and its related disciplines, and the investigation of significant problems in public health practice.

Applications for admission to the School of Public Health are accepted for the fall semester only because of the sequential nature of the courses. To apply for graduate study, you must complete the Graduate Division application (Graduate Application for Admission).
December 1 for admissions and fellowships. The application, which you will submit electronically, is available at www.grad.berkeley.edu/prospective.

For further information about the School of Public Health, go to sph.berkeley.edu or write the School of Public Health, 140 Warren Hall #7360, Berkeley, CA 94720-7360. E-mail: sphinfo@berkeley.edu.

Lower Division Courses

14. Healthy People: Introduction to Health Promotion. (4) Three hours of lecture and one hour of discussion per week. Introduction to personal and community health, drawing on physical and social sciences. Specific content may include alcohol and drug abuse, exercise, nutrition, exercise, the environment, communication, and sexuality. Readings, lectures, and discussions explore key issues for students and examine those issues in the context of contemporary American society. Public health approaches to disease prevention and health promotion are explored for each topic. (F) Griego

24. Freshman Seminar in Public Health. (1) Course may be repeated for credit. One hour of lecture/discussion per week. Sections 1-2 to be graded on a letter-grade basis. Sections 3-4 to be graded on a passed/not passed basis. Seminar limited to 15 freshmen led by senior faculty on broad topics in public health such as financing health care, promoting preventive behavior, controlling major public health problems such as drug problems at the policy, community, organizational, and individual levels will be examined. (SP) Griego

39. Freshman/Sophomore Seminar. (2) Course may be repeated for credit as topics vary. Priorities given to freshmen and sophomores. Seminar format. One hour of seminar per week per unit. Sections 1-2 to be graded on a letter-grade basis. Sections 3-4 to be graded on a passed/not passed basis. Freshman and sophomore seminars offer lower-division students the opportunity to explore an intellectual topic with a faculty member and a group of peers in a small-seminar setting. These seminars are offered in all campus departments; topics vary from department to department and from semester to semester. (F,SP) Staff

84. Sophomore Seminar. (1,2) Course may be repeated for credit as topics vary. One hour of seminar per week per unit for 15 weeks. One and one-half hours of seminar per week per unit for 10 weeks. Two hours of seminar per week per unit for eight weeks. Three hours of seminar per week per unit for five weeks. Sections 1-2 to be graded on a passed/not passed basis. Sections 3-4 to be graded on a letter-grade basis. Prerequisites: Lower division standing. Supervised experience relevant to specific aspects of public health in off-campus organizations. Regular individual meetings with faculty sponsor and written reports required. (F,SP) Staff

97. Field Study. (1-4) Course may be repeated for credit. Variable format. Must be taken on a passed/not passed basis. Prerequisites: Lower division standing. Supervised experience relevant to specific aspects of public health in off-campus organizations. Regular individual meetings with faculty sponsor and written reports required. (F,SP) Staff

124. Principles of Statistics. (1) Course may be repeated for credit. Introductions to Courses and Curricula section of this catalog. Variable format. Must be taken on a passed/not passed basis. (F,SP)

199. Supervised Independent Study. (1-4) One to four hours of independent study per week. Must be taken on a passed/not passed basis. Prerequisites: Consent of instructor. (F) Staff

Upper Division Courses

C102. Bacterial Pathogenesis. (3) Three hours of lecture per week. Prerequisites: Molecular and Cell Biology C100A/Chemistry C130 or Molecular and Cell Biology 102 or consent of instructor. This course for upper division and graduate students will explore the molecular and cellular basis of microbial pathogenesis. The course will focus on model microbial systems and mechanisms underlying pathogenesis. Most of the emphasis will be on bacterial pathogens of mammals, but there will be some discussion of viral and protozoan pathogens. There will be an emphasis on experimental approaches that also include some aspects of bacterial genetics and physiology, immune response to infection, and the cell biology of host-parasite interactions. Also listed as Molecular and Cell Biology C103 and Plant and Microbial Biology C1103. (SP) Staff

103. Drugs, Health, and Society. (2) Two hours of lecture and one hour of discussion per week. Introduces undergraduates to concepts basic to understanding and analyzing relationships between drugs, health, and society. This course, from any perspective, examines legal and illegal drugs and their effects on personal and community health. Prevention of drug problems at the policy, community, organization, and individual levels will be examined. (SP) Griego

104A-104B, Health Promotion in a College Setting. (2;2) Course may be repeated for credit. One and one-half hour of lecture per week and one hour of seminar every other week. Credit and grade to be awarded on an individual basis. Prerequisites: Consent of instructor. Topics include health promotion, medical self-care, and delivery of health care service. Through a combined approach, this course will focus on how and why students apply to the campus community. The course is divided into three sections corresponding to particular campus health field experiences in which students may be involved. (F) Griego

105. Policy, Planning, and Evaluation of Health Promotion in a College Setting. (3) Course may be repeated for credit. Three hours of lecture/discussion per week. Prerequisites: 14, 104A or 104B, and consent of instructor. Theory and practice of policy, planning, and evaluation of health promotion programs in a college setting. Comparison of different methodologies (peer education, teaching, problem-solving, organizational change), content areas (stress, nutrition, alcohol and drugs, AIDS, sexuality, women’s health, self-care, health services), and settings (clinical, classroom, living room, campus). (F,SP) Griego

113. Campus/Community Health Impact Program. (3) Three hours of lecture per week. The primary goal of this course will be to begin the process of understanding the interconnectedness between personal health and the larger context of society and the impact to community. Classes will cover the principles of public health health promotion philosophy, social consciousness, current public health issues, community health issues, diversity and oppression theories. Students are expected to participate in a community-oriented project of their own choosing. The goal of the community project is to translate community action through service learning activities, which will further reinforce the connections between personal health and public health issues. (F) Rincón

114. Issues in Personal and Community Health Promotion. (3) Three hours of lecture and one hour of discussion per week. Introduction to trends and issues in the educational approach to health promotion at the individual, community, and population levels. Emphasis on basic information on selected topics (i.e., stress, sexuality, fitness, alcohol and drugs, environmental health), with emphasis on the social and political factors that influence both the definition of health and actual health data. (SP) Staff

115. Controversies in Biomedical Ethics. (3) Three hours of lecture and one hour of discussion per week. Medicine and biomedical science daily confront some of the most serious philosophical and social issues of our time, including existence, death, health and suffering, personal liberty, truth, altruism, and justice. Contemporary biomedical ethics is a complex blend of moral philosophy, theology, clinical deliberation, and social and legal thought, informed by the social sciences and humanities. This course aims to examine the foundations of biomedical ethics, understand the underlying assumptions, consider how changing conditions change these foundations, and address the desirability and inevitability of such changes. (SP) Burack

116. Seminar on Social, Political, and Ethical Issues in Health and Medicine. (2) Two hours of lecture and one hour of discussion per week. Formerly Interdepartmental Studies 130. An interdisciplinary approach to health and medicine administered through the Health and Medicine Preparatory Program (HMAPP). Guest lecturers will speak on the social, political, and ethical aspects of health and medicine; students will then discuss and present analyses of the reading materials as well as issues raised by the speakers. (F,SP) Duh

C129. The Aging Human Brain. (3) Two hours of lecture and one hour of discussion per week. Prerequisites: Any of the following: 150A-150B, Biology 1A or 1B, Cognitive Science C1, Molecular and Cell Biology 61 or 64, Psychology 110. The course will survey the field of the human brain, with introductory lectures on the concepts of aging, and brief surveys of normal neuroanatomy, neuropsychology, neurochemistry, and neuropsychology as well as methods such as imagining, electrophysiological, and pathophysiological changes associated with aging will be covered from the same perspectives: neuropsychology, anatomy, biochemistry, and physiology. Major neurological diseases affecting aging, including Alzheimer’s and Parkinson’s disease will be covered, as well compensatory mechanisms, neuroendocrine changes with aging, depression and aging, epidemiology of aging, and risk factors for aging. Also listed as Neuroscience C129. Offered odd-numbered years. (F) Jagust

130AC. Aging, Health, and Diversity. (3) Three hours of lecture per week. Formerly 130. The goal of this seminar is to provide a critical examination of aging and health from a broad, multicultural perspective. Political economy and life course perspectives will be among the key theoretical frameworks used to examine how race, class, culture, gender, and sexual orientation interact to help shape and determine the health and well-being of the elderly and their access to and use of health care. Key programs and policies for the elderly will be examined in sociocultural perspective with attention to their salience in a multicultural society. The course will be offered at the upper division (upper division) level to meet the American Cultures requirement and is also open to graduate students and will serve as an elective for the new Multicultural Health Specialty Area in the School of Public Health. This course satisfies the American Cultures requirement. (SP) Minkler

131AC. Race, Ethnicity, and Health in America. (3) Three hours of lecture per week. Race, Ethnicity, and Health in America will attempt to integrate public health theory, values, and practice into a curriculum that acknowledges and values the health practices and philosophies of African American, Chicano/Latino, Asian, and Native American communities. By examining the historical and cultural prerequisites to health for each ethnic community, the course will allow students to fully appreciate the distinct contributions of each group. This course satisfies the American Cultures requirement. (SP) Griego

140. Introduction to Risk and Demographic Statistics. (4) Three hours of lecture and one hour of discussion per week. Prerequisites: One year of calculus. Statistical and evaluation methods in studies of human mortality, morbidity, and natality. History of statistical terminology and notation, critical appraisal of registry and census data, measurement of risk and introduction to life tables. Computational systems and the analysis of mass data. (F) Tarter

142. Introduction to Probability and Statistics in Bi- ology and Public Health. (4) Three hours of lecture and two hours of discussion per week. Prerequisites: High School Algebra. Formerly 142A. Descriptive statistics, probability, probability distributions, point and interval estimation, hypothesis testing, chi-square, cor-
This course provides an introduction to statistical and computational methods for the analysis of biomedical and genomic data. Statistical topics, introduced in a biological context, include numerical and graphical summaries of data; basic notions in probability; loss-based estimation (e.g., least-squares regression, maximum likelihood estimation); model selection; multiple hypothesis testing; Markov chains; hidden Markov models; resampling; simulation studies. Biological questions considered include, but are not limited to, modeling meiosis; genetic mapping; nucleotide and protein-sequence analysis; molecular evolution; computational gene finding; and DNA microarray experiments. The course also introduces statistical computing resources for the analysis of biological data, with emphasis on the R language and environment (www.r-project.org) and bioconductor packages (www.bioconductor.org). In addition, the course introduces basic notions in genetics and molecular biology and involves the critical reading of articles related to statistical analyses in the biological and medical sciences. (SP) Dudoit

C143. Introduction to Statistical Methods in Computational and Genomic Biology. (3) Three hours of lecture and one hour of laboratory per week. Prerequisites: C144A, 135 or consent of instructor. This course provides an introduction to statistical and computational methods for the analysis of biomedical and genomic data. Statistical methods discussed include linear models, resampling; simulation studies. Biological questions considered include, but are not limited to, modeling meiosis; genetic mapping; nucleotide and protein-sequence analysis; molecular evolution; computational gene finding; and DNA microarray experiments. The course also introduces statistical computing resources for the analysis of biological data, with emphasis on the R language and environment (www.r-project.org) and bioconductor packages (www.bioconductor.org). In addition, the course introduces basic notions in genetics and molecular biology and involves the critical reading of articles related to statistical analyses in the biological and medical sciences. Also listed as Statistics C143. (SP) Dudoit

144A. Introduction to SAS Programming. (2) This course (or equivalent) is required for students who plan to enroll in 251, Practicum in Epidemiological Methods. Enrollment limited to the School of Public Health students. If space permits, others may enroll with consent of instructor. Two hours of lecture, three hours of laboratory, and two hours of work outside of class per week for eight weeks. Prerequisites: 142 or consent of instructor. This course is intended to serve as an introduction to the SAS programming language for Windows and is applied, workshop environment. Emphasis is on data management and programming in a public health research setting. Topics include SAS language to compute, recode, label, and format variables as well as sort, subset, concatenate, and merge data sets. SAS statistical procedures will be used to compute univariate and bivariate summary statistics and tests, simple linear models, graphical plots, and statistical output data sets. (SP) Lein

144B. Intermediate SAS Programming. (2) Enrollment is limited to School of Public Health students. If space permits, others may enroll with consent of instructor. Two hours of lecture, three hours of laboratory, and two hours of work outside of class per week for eight weeks. Prerequisites: 144A. Topics include data step flow control, looping and automated processing of data, if statements, data set reconfiguration, strategies, data set reconfiguration, use of SAS Macro variables, and writing simple SAS Macro programs. (SP) Lein

145. Statistical Analysis of Continuous Outcome Data. (4) Three hours of lecture and two hours of laboratory/discussion per week. Prerequisites: 142 or equivalent. Formerly 142B. Regression models for continuous outcome data: least squares estimates and their properties, interpreting coefficients, prediction, comparing models, checking model assumptions, transformations, and outliers, and regression diagnostics. Explanatory variables: interaction and analysis of covariance, correlation and partial correlation. Appropriate graphical methods and statistical computing. Analysis of variance for one- and two-factor models: factor checking, multiple comparisons. Random effects models and variance components. Introduction to repeated measures models. (SP) Lahit

150A. Introduction to Epidemiology and Human Disease. (3) Three hours of lecture and one hour of discussion per week. Prerequisites: Upper division or consent of instructor. Formerly 150. This course introduces epidemiological methods with the goal of teaching students to read critically and interpret published epidemiological studies in humans. The course also exposes students to the epidemiology of diseases and conditions of current public health importance in the United States and internationally. (SP) Abrams

150B. Introduction to Environmental Health Sciences. (3) Three hours of lecture and one hour of discussion per week. Prerequisites: 142 and 150A recommended. May be taken concurrently. Formerly second half of 150. The course will present the major effects of human and natural activities that lead to release of hazardous substances into the environment as well as the causal links between chemical, physical, and biological hazards and the environment and their impact on human health. The basic principles of toxicology will be introduced, including receptors, absorption, distribution, metabolism, and excretion of chemicals. The overall role of environmental risks in the pattern of human disease, both nationally and internationally, including medical and policy strategies, including risk assessment, used to evaluate and control these risks will be introduced. (SP) K. Smith

150D. Introduction to Health Policy and Management. (3) Three hours of lecture/discussion per week. Prerequisites: 142 and 150A recommended. May be taken concurrently. Formerly second half of 150. The course will present the major effects of human and natural activities that lead to release of hazardous substances into the environment as well as the causal links between chemical, physical, and biological hazards and the environment and their impact on human health. The basic principles of toxicology will be introduced, including receptors, absorption, distribution, metabolism, and excretion of chemicals. The overall role of environmental risks in the pattern of human disease, both nationally and internationally, including medical and policy strategies, including risk assessment, used to evaluate and control these risks will be introduced. (SP) K. Smith

150E. Introduction to Community Health and Human Development. (3) Three hours of lecture/discussion per week. Formerly 150D. This course is intended to introduce students to health policy making and health care organizations in the United States. Students will be introduced to concepts from public policy, economics, organizational behavior, and political science. Students will also be introduced to current issues in U.S. health policy and the present organization of the U.S. health care system. (F) Halpin

150F. Introduction to Community Health and Human Development. (3) Three hours of lecture/discussion per week. Formerly 150D. This course is intended to introduce students to health policy making and health care organizations in the United States. Students will be introduced to concepts from public policy, economics, organizational behavior, and political science. Students will also be introduced to current issues in U.S. health policy and the present organization of the U.S. health care system. (F) Halpin

150G. Introduction to Community Health and Human Development. (3) Three hours of lecture/discussion per week. Formerly 150D. This course is intended to introduce students to health policy making and health care organizations in the United States. Students will be introduced to concepts from public policy, economics, organizational behavior, and political science. Students will also be introduced to current issues in U.S. health policy and the present organization of the U.S. health care system. (F) Halpin

H195A-H195B. Special Study for Honors Candidates in Public Health. (3,4) Credit and grade to be awarded on completion of sequence. Prerequisites: C142, 144A, 144B, or consent of instructor. Two days of laboratory per week. Prerequisites: One year each of college-level biology and chemistry. Introduction to properties of the essential nutrients and the roles of nutrients in human nutrition. The course will satisfy the core requirements for the undergraduate major in public health. (SP) Saratiano

162A. Public Health Microbiology. (3) Three hours of lecture per week. Prerequisites: One year each of college-level biology and chemistry. Introduction to properties of the essential nutrients and the roles of nutrients in human nutrition. The course will satisfy the core requirements for the undergraduate major in public health. (SP) Saratiano

162B. Public Health Microbiology. (3) Three hours of lecture per week. Prerequisites: One year each of college-level biology and chemistry. Laboratory to accompany 162A. Must be taken concurrently with 162A. (F) Liu, Loretz

C170B. Advanced Toxicology. (3,4) Three to four hours of lecture per week. Prerequisites: Nutritional Science and Toxicology 110 for three-unit option. The application of toxicology to answer questions about safety and risk. Using a case-study approach, participants will learn how to interpret toxicological data and apply their knowledge to evaluating the risk presented by exposures to toxic chemicals, including drugs and environmental contaminants. Discussion of current topics and controversies in the field of toxicology. Also listed as Nutritional Science and Toxicology C119. (SP) M. Smith

C172. Introduction to Pharmacology and Toxicology. (3) Three hours of lecture per week. Prerequisites: Organic chemistry; upper division biological science. Principles of drug action and toxicology. Brief survey of selected drugs and mechanisms of action. Also listed as Nutritional Science and Toxicology C112. (SP) Wei

180. Topics in Human Sexuality. (2) Two hours of seminar per week. This course is built around an evolutionary perspective on the basis of human mating behavior and explores a variety of topics in human sexuality with the goal of helping us to understand ourselves and to understand and accept the behavior of others. The course takes examples from art, sociology, anatomy, anthropology, physiology, contemporary politics, and history to explore the richness of human sexual behavior and reproduction and the interaction between our biology and our culture. (F) Potts

181. Population and Poverty. (2,3) Two hours of lecture/discussion per week. Globally one million more births than deaths occur every 112 hours, 90% in the developing world. While considerable attention was focused on rapid population growth, afterwards, the attention has faded and investment in family planning evaporated. Family size is a major source of development challenges. This course seeks to provide an understanding of the relationships between population growth, poverty, women's autonomy, and health. It explores the policies and decisions underlying changing paradigms among demographers, economists, and development specialists. (F,SP) Campbell, Hemm, Potts, Prata, Vahidnia

183. The History of Medicine, Public Health, and the Allied Health Sciences. (3) Three hours of lecture per week. Prerequisites: Knowledge of (and preferably a college level course which covered) basic aspects of (mammalian) physiology and anatomy. Graduate or upper division undergraduate status. This course will examine the historical developments of social and scientific responses to human disease and the history of medicine. It will examine the changing roles of medicine and the emergence of medical specialties, and the development of individual medical specialties. (F,SP) Hook

H1915A-H1915B. Special Study for Honors Candidates in Public Health. (3,4) Credit and grade to be awarded on completion of sequence. Prerequisites: C142, 144A, 144B, or consent of instructor. Two days of laboratory per week. Prerequisites: Upper division status. Students may take individual meetings with a faculty advisor culminating in a thesis at completion of H1915B. H1915A will concentrate primarily on researching a topic in public health. H1915B will focus on developing a research project leading to a thesis in the form of a thesis. Students must enroll for both semesters of the sequence. (F,SP) Staff

197. Field Study in Public Health. (1-4) Course may be repeated for credit. Must be taken on a passed/not passed basis. Prerequisites: Upper division standing. Research and experience on developing aspects of public health in off-campus organizations. Regular individual meetings with faculty sponsor and written reports required. (F,SP) Staff

198. Directed Group Study. (1-4) Course may be repeated for credit. Must be taken on a passed/not passed basis. Prerequisites: Upper division standing. Research and experience on developing aspects of public health in off-campus organizations. Regular individual meetings with faculty sponsor and written reports required. (F,SP) Staff
199. Supervised Independent Study and Research. (1–4) Course may be repeated for credit. Must be taken on a passed/not passed basis. Enrollment restrictions: Instructor Consent and Curriculum and Sectional curricula of this catalog. (F,SP) Staff

Graduate Courses

200A. Current Issues in Public Health Ethics: Research and Practice. (3) Two hours of lecture per week. Prerequisites: Graduate standing. This course seeks to examine the ethical challenges inherent in public health practice, research, and policy. It covers a range of topics, including research ethics and the management of different public health dilemmas. The cases considered include treating homeless people with TB, rationing medical care in the United States, conducting HIV studies of maternal-fetal transmission in Africa, managed care policies and setting priorities, the deaf community and cochlear implants, and the sociological implications of genetic information. The goal is to enable students to develop an analytical methodology that has practical application for their future work. (SP) Halpern

200C. Public Health Core Breadth Seminar. (2) Two hours of lecture per week plus optional 45-minute discussion. Prerequisites: Graduate standing. This course is designed to provide students with a broad overview of the field of public health and a basic understanding of the contributions of the environmental, behavioral, and management sciences to the practice of public health. A central organizing principle of the course will be the concept of risk, particularly in terms of risk analysis of public health and the environment, behavior, and the management sciences. By the conclusion of this course, students will be able to discuss and describe seminal as well as current theories and methods related to efforts to 1) manage ambient and place-specific toxins; 2) manage behaviors that increase individual and collective risk of illness; 3) build organizations that manage toxins as well as individual and collective health; and 4) use the knowledge of the state to manage toxins as well as individual and collective risk taking. (F) Potts, Robinson

200D. Applied Public Health: Putting Theory Into Practice. (2) Two hours of lecture per week. Prerequisites: 142, 200C, and 250A. This course trains students in applied public health through discussion, lectures, guest speakers, cases, and field trips. Students integrate learning from previous courses with work experience. Cases emphasize current national/global public health issues. At course completion, students will be able to: Demonstrate the capacity to identify, research, and respond to real-life public health challenges; work effectively and efficiently in problem-solving groups; professionally present the results of their effort to large groups for feedback and evaluation. (SP) Braff, Rundall, Winkelstein

201A. Social and Cultural Perspectives in Public Health. (3) Three hours of lecture per week. Prerequisites: Graduate standing or consent of instructor. Using social and cultural theories for analyzing public health problems in America is the purpose of this course. The course has three objectives. First, to familiarize students with the use of social and cultural theories for analyzing specific public health problems; second, to increase understanding about how social and cultural factors shape the perception, recognition, and response to public health issues and problems; and, third, to demonstrate how each public health professional can benefit from social science knowledge development related to their practice or research interests. (SP) Staff

201E. Public Health Interventions: Theory, Practice, and Research. (2,3) Two hours of seminar per week. Prerequisites: Experience with public health interventions and doctoral student status or consent of instructor. This course focuses on the primary factors that affect health and the interventions that can promote health. Students examine the determinants of health and the development of theory, history, typology, and approaches of public health interventions. Community level interventions and multidisciplinary approaches receive special emphasis. The course stresses a rigorous critique of the outcomes of interventions and practical ways to improve them. Students take an active role in the design and conduct of the course. (SP) Neuhauser, Syme

201F. Community-Based Research and Interventions to Promote Health: Theory and Methods. (3) Three hours of lecture per week. Prerequisites: Graduate standing. This course will delve into theoretical, methodological, and methodological applications in conducting physical and mental health interventions in diverse communities. Course emphases are: a) conceptualization and implementation of community interventions from a social science perspective; b) logic models of intervention process and outcomes; c) comparing and integrating prevention science and community-based participatory approaches to intervention; d) strategic planning, implementing and diffusing community-based interventions across diverse settings; and e) cultural competency in community intervention development. (F) Ozer

202B. Ethnic and Cultural Diversity in Health Status and Behavior. (3) Three hours of lecture per week. Course will review the critical theories of violent behavior, and the burden of disease resulting from violence, warfare, and other large-scale conflicts. It will explore the role of public health at the individual, community, and society level in combating violence, war, and acts of terrorism. (SP) Morgan

202D. Public Health Implications of Human Violence. (3) Three hours of lecture per week. Course will review the critical theories of violent behavior, and the burden of disease resulting from violence, warfare, and other large-scale conflicts. It will explore the role of public health at the individual, community, and society level in combating violence, war, and acts of terrorism. (SP) Morgan

202F. Advanced Social and Cultural Theory. (3) Three hours of seminar per week. Prerequisites: 201A, 202D, and consent of instructor. The course is designed to link current advances in socio-logical, anthropological, and political economic theories to public health issues. Particular emphasis is placed on providing a foundation for dissertation research. (F,SP) Morgan

202G. Advanced Alcohol Research Seminar. (1) Course may be repeated for credit. Two hours of seminar per week. Prerequisites: Social Welfare 238B or 250U (may be taken concurrently). This course is an advanced alcohol research seminar in which presentations are made by alcohol research scientists nationally and internationally, as well as pre- and post-doctoral fellows, and focus on special topical areas related to psycho-social research in the field each semester. Areas covered include the epidemiology of drinking patterns and alcohol-related problems relating to treatment and prevention of alcohol-related problems, and health services research. Guest presenters are also provided related to topics outside of psycho-social research to provide a breath of understanding in the field. The seminar also includes sessions focused on methodological issues in alcohol-related research and grant writing, and has a research ethics component covering a number of sessions. The seminar will not provide basic information on alcohol studies and students who are new to the field are encouraged to take Social Welfare 238B or 250U. (FSP) Cherpitel, Kaskutas

203A. Theories of Health and Social Behavior. (3) Three hours of lecture per week. Prerequisites: Background in social and behavioral sciences. Consent of instructor: Prerequisite: Instructor: The course provides a survey of theoretical perspectives that influence the behavioral, social, and cultural dimensions of community health problems. An emphasis is placed on critically examining the strengths and weaknesses of particular theories for addressing complex health problems and mounting effective community-based intervention programs. (F) Herd

204A. Mass Communications in Public Health. (3) Three hours of lecture per week. Prerequisites: Graduate standing or consent of instructor. Examines the role of mass communication in advancing public health goals. Reviews mass media theories in general and theories of the news media in particular. Provides an in-depth understanding of media advocacy as a strategy for using news media and paid advertising to support policy initiatives at the local, state, and federal levels. Examples are drawn from a wide range of public health issues. (F) Staff

204D. Community Organization and Community Building for Health. (3,4) Three hours of lecture per week. Prerequisites: Consent of instructor. This course emphasizes community organization and community building as major approaches to creating healthy communities and fostering broader social change. It further examines the role of public health practitioners as change agents, stressing in particular the values and ethical issues that arise within the context of diverse and multicultural communities. Both elements of theoretical knowledge and the development of skills in applying such knowledge in the areas of community organization and community building will be stressed. (SP) Service Learning Committee

204E. Multicultural Competence in Public Health. (3) Three hours of lecture per week. Prerequisites: Enrolled in Multicultural Health Specialty area or consent of instructor. This class is designed to give students the contextual understanding of cultural and political competence to initiate the student in developing culturally competent tools. Understanding the basic assumptions of the public health system, discovering one’s own cultural biases, and learning an approach which values diversity as well as respects cultural issues related to approach and process. Will enable the student to be more effective in public health practice. This course will achieve these goals through a combined approach of lecture, discussion, and class presentations of a case study. (F) Staff

205. Program Planning, Development, and Evaluation. (3) Three hours of lecture/discussion per week. Prerequisites: Graduate standing or consent of instructor. This course will focus on the planning, implementation, and evaluation of programs. Concepts, methods, and limitations in the determination of nutritional status; application of methodologies for determining and interpreting data; technical, social, and political implications of nutritional assessments and related community needs. (SP) Staff

206B. Food and Nutrition Policies and Programs. (3) Three hours of lecture/discussion per week. Prerequisites: Graduate standing or consent of instructor. This course examines the historical origins of food and nutrition improvement programs in the United States, including the political and administrative conditions that led to the development of these programs. It also examines the goals, design, operations, and effectiveness of some of these programs: Food Stamp Program, the Special Supplemental Nutrition Program for Women, Infants, and Children, School Lunch Program, the School Breakfast Program, Head Start, the Child Care Food Program, and the Elderly Nutrition Program. (SP) Femald

206C. Nutritional Epidemiology. (3) Four hours of lecture per week. This course develops the ability to relate public health and the practice of epidemiology research critically. Basic research methodology, ethics, and interpretation will be reviewed, and issues in design, analysis, and interpretation unique to nutritional epidemiology
The core course in the field examines the determinants of family health. This course will survey the field of health promotion and its application to women and children; 4) identifying the impact of health policies and programs on community health. The course considers the role of health professionals in 1) documentation of clinical health status; 2) MCH data sources, uses of data, and related issues; and 3) policies and practices in MCH (including discussions with community professionals to address health disparities, public policy concerns, and current issues in MCH, and current research in MCH). In addition, major health problems facing women, children, and adolescents will be explored, including how and why these are distributed in these populations. (F) Pies

210C. Needs Assessment in Maternal and Child Health. (3) Two hours of seminar/discussion per week. Prerequisites: Graduate student in Public Health. Formerly 210B. The purpose of this course is to provide a conceptual, methodological, and practical understanding of how to conduct systematic analysis of the needs and the strategies that can be used for conducting needs assessments in maternal and child health. The course is aimed at students who anticipate working with populations involving measuring health problems in communities, planning for health services, and advocating or making decisions about the distribution of community health resources. (F) Guendelman

210D. Reproductive and Perinatal Epidemiology. (2) Course may be repeated for credit. Two hours of lecture per week. Prerequisites: Graduate standing or consent of instructor. Research methods and issues in perinatal and reproductive epidemiology with emphasis on methods of study. Specific advanced topics will be selected to solve practical problems in perinatal health. The course will focus on the role of reproductive and perinatal factors in the development of health problems in children. (F) Miller

211. Health and Human Rights. (3) Three hours of lecture/discussion per week. The course examines the origins of health and human rights concerns and outlines a conceptual basis for human rights among health professionals. It provides an overview of the epidemiology of human rights violations worldwide and an analysis of the psychology of abuse. The course considers the role of health professionals in 1) documenting the health and social consequences of human rights violations and war; 2) treating survivors of abuse; 3) teaching human rights concerns to health workers; 4) identifying the impact of health policy on human rights; and 5) participating in health education and advocacy. The course will also examine the complexity of human rights issues and cultural relativism and the role of accountability for the past abuses in prevention. (SP) Iacopino, Weinstein

212A. International Maternal and Child Health. (2) Two hours of lecture/discussion per week. Prerequisites: Graduate standing or consent of instructor. Assessment of health needs, and health services on a worldwide basis; special emphasis on problems, policies, and programs affecting MCH and family planning in developing countries. (F) Miller

212C. Health and Social Policy in Mexico and Latin America. (2-3) Two hours of lecture and one hour of discussion per week. Critical issues in health and social welfare policies and structures in Latin America. Various theories of development are considered and related to health care delivery. There is an examination from a multidisciplinary perspective including demography, epidemiology, family structure, environmental influences, occupational health, and migration. (SP) Guendelman

212D. International Health Specialty Area Core Courses. (3 units of credit) This course may be repeated for credit. Prerequisites: Qualified seniors may enroll with prior consent of instructor. This is a graduate level survey course on selected topics in international health development. The course will examine the main determinants to the global burden of disease and discuss current interventions and possible approaches for the future. The primary goal of the course is to transfer knowledge and experience to help public health students evaluate international health projects and prepare themselves for international health work. The focus is on developing countries with the most challenging large-scale health problems, where health professionals need an understanding of clinical and anthropological features. Subsequent classes will cover the genetics and molecular biology of the disease, as well as biomarkers, epidemiology, risk factors, treatment, development of diagnostic tests, and ethical issues. The course will also serve as a model for the analysis of complex diseases with multiple genetic and environmental causes, and late-onset neurodegenerative diseases. The course will be a core course for students in public health, neuroscience, and psychology. A background in biological sciences is expected. (F) Jagus

217D. Biological and Public Health Aspects of Alzheimer’s Disease. (3) Two hours of seminar/discussion per week. Prerequisites: Graduate standing or consent of instructor. Background in biological sciences is expected. This course will survey the field of Alzheimer’s disease (AD) from a biological and public health perspective by reading original research papers in the fields of medicine, neuroscience, and epidemiology. The course will begin with a historical survey of the concept of AD, followed by a description of clinical, pathological, and genetic features of AD and related dementia syndromes. It will cover the genetics and molecular biology of the disease, as well as biomarkers, epidemiology, risk factors, treatment, development of new diagnostic approaches, and ethical issues. The course will serve as a core course for students in public health, neuroscience, and psychology. A background in biological sciences is expected. (F) Jagus

218B. Evaluation of Health and Social Programs. (3) Three hours of lecture/discussion per week. The study of concepts, methods, rationale, and uses of evaluation research as they apply to health and social programs. (SP) Staff

218C. Advanced Program and Policy Evaluation. (3) Three hours of lecture/discussion per week. Prerequisites: Introductory course on program evaluation (such as 218B). This course focuses on evaluation research. It is intended for those who have already completed an introductory course on program evaluation (such as 218B), and it will be especially useful to doctoral students intending to pursue careers as policy analysts or teachers of evaluation. By the completion of this course, students will be able to 1) identify the stages of development of evaluation theory and describe the important differences in the theories that were developed in each stage; 2) describe the evaluation theories of at least eight leading evaluation theorists and discuss the strengths and weaknesses of each approach; 3) identify the theoretical perspectives that influenced the development of each of the major evaluation studies; 4) distinguish among the following types of meta-evaluations: an evaluation audit, a critical review and re-analysis, a research synthesis, and a meta-analysis; 5) conduct a meta-evaluation; and 6) present a meta-evaluation to peers in a professional setting. (SP) Rundall

219A. Advanced Methods: Qualitative Research. (3) Three hours of lecture/discussion per week. Prerequisites: Doctoral student in public health or a related discipline. This course provides an introduction to the methodological components involved in various aspects of qualitative research. (SP) Staff

219C. Community-Based Participatory Research in Public Health. (3-4) Three hours of lecture/discussion by the faculty will be complemented by presentations by prominent Bay Area researchers in the areas of geriatrics and gerontology. This is the core course for students in the School of Public Health specialty in aging and public health. (F) Satiarro
per week. The goal of this seminar is to provide doctoral and advanced master’s degree students with an understanding of theories, principles, and strategies of community-based participatory research (CBPR) and related traditions. The advantages and limitations of this approach, skills necessary for effective application, and theory-driven case studies will be explored. Students undertaking a service-learning project applying CBPR methodology will receive 2 hours of credit per week.

219D. Social and Behavioral Health Research: Introduction to Survey Methods. (3) Three hours of lectures per week. This course provides students with a thorough tool kit for designing survey questionnaires and for implementing telephone, face-to-face, and mail surveys. The class sessions are designed to convey practical knowledge, with a case study approach used to complement each topical lecture. An SPSS laboratory is also given each semester. The course is elective for Health and Social Behavior students, and many from the multidisciplinary program and other tracks in the school (including UCSF, e.g., nurses in their Ph.D. programs) have often enrolled as well. By the end of the semester, students will have designed, as their class project, a research project including a study design rationale, aims and hypotheses, data collection methods and measures, human subjects consent form, codebook and analysis plan. (F) Staff

219E. Introduction to Qualitative Methods in Public Health. (3) Three hours of lectures per week. This course is designed to familiarize students who have little or no experience in conducting qualitative research with the perspectives, methods, and techniques of this emerging tran

220. Health Policy Decision-Making. (3) Three hours of lectures/discussions per week. Introduction to federal-level health policy and analysis of government capacity in addressing major issues in health policy. The course explores structural impediments to reform in the U.S., regulatory decision-making—particularly decision-making under conditions of uncertainty, and basic tools of policy analysis. Students will apply these tools in a seminar paper that analyzes a proposed or existing health policy problem. The seminar paper must be submitted to the instructor. (SP) Miller

220A. Health Politics and Policy. (3) Three hours of lectures per week. Prerequisites: Graduate standing or consent of instructor. Introduction to some of the major analytic concepts in political science and their applications to current health care policy. Topics include power, interests, conflict, equity, liberty, paternalism, security, rights, rules, and representation. (SP) Halpin

220C. Health Risk Assessment, Regulation, and Policy. (4) Four hours of lecture per week. Prerequisites: 250A, 270A/270B recommended. Graduate standing. This course provides an introduction to the relationship of environmental and occupational health risk assessment and describes the policy context in which decisions to manage environmental health risks are made. The course presents the quantitative methods used to analyze risk assessments and their use to develop their own risk assessment for an environmental health problem. The course also provides a broad overview of occupational and environmental health regulation and takes an integrated view of risk, cost, and benefits are considered. Current political controversies about environmental policy will be examined. (F) Hammond, McKone

221A. The City and Health: Emphasis on Oakland. (3) Two hours of lecture/discussion per week. Prerequisites: Graduate standing or consent of instructor. For merly 221A-C. A history and analysis of the relation ship of urban development and the health of its populations. The problems of diversity, politics, participation, governance, economic development, poverty, housing, community, and health policy will be emphasized. Health cities as an organizing framework for the “new public health” will be used as a model of coping with health and related issues. (SP) Duhl

222. Health Planning and Policy: An International Perspective. (3) Three hours of lecture/discussion per week. Prerequisites: Graduate standing or consent of instructor. Introduction to the concepts of health planning and policy, and planning throughout the world—rich and poor, centralized and decentralized. A group report will be developed for a major client dealing with international health issues. (SP) Duhl

222A. Health Care Technology Policy. (2) Two hours of lecture per week. This course examines the public policy institutions and processes influencing innovation, regulation, and payment for biotechnology, pharmaceuticals, and medical devices. Topics include technology transfer and the Food and Drug Administration (FDA) review for safety and efficacy, insurance coverage policy at the Center for Medicare and Medicaid Services (CMS), coverage, payment, and benefit design for biotechnology and medical devices, and the cost-effectiveness analysis. Special topics vary from year to year. Examples and case studies are drawn from all three of the technology sectors. (F) Robinson

223A. Introduction to the Health Care System. (3) Three hours of lecture per week. Prerequisites: Graduate standing or consent of instructor. An intensive introduction that will provide students with an understanding of the structure, financing, and special properties of health services delivery. The course will analyze the major health care system policy issues that drive reform efforts. (F) Raube

223B. Cases in Health Management. (3) Three hours of lecture/discussion per week. Prerequisites: Graduate standing or consent of instructor. This is an advanced course in health management. It is intended for master’s degree students in the Division of Health Policy and Management who have already completed their field residency. The course consists of analyses and discussions of cases highlighting complex managerial issues in health care, biotechnology, and other health-related organizations. The cases used in the class will provide the student with real-world management problems, choices, and information. The key task for the student is to develop solutions that solve the problems and policy issues that drive reform efforts. (SP) Faison

223C. Strategic Management and the Organization of Health Services. (3) Three hours of lecture per week. Prerequisites: Graduate standing or consent of instructor. Students are required to have a general background knowledge of the health services system. The overall purpose of this course is to assist the student in managing health care organizations from a strategic perspective. This is accomplished by systematically addressing systemwide, organization-wide, group- and individual-level issues in strategy formulation, cost control, implementation, and performance. Emphasis is placed upon the manager’s role in simultaneously taking into account a wide variety of internal and external factors to improve organizational effectiveness. Special attention will be given to the health needs of individuals and communities. Emphasis is also placed on the development and implementation of strategies to meet multiple stakeholder demands, with particular attention given to continuous quality improvement/total quality management approaches. The course will cover a wide variety of health care organizations, including physician organizations, allied health systems, hospitals, HMOs, suppliers, pharmaceutical and biotech companies. The course builds on Business Administration 205: Organizational Behavior and 223A, Medical Care Organization. (SP) Staff

223E. Capstone Seminar in Health Policy and Management. (2) Two hours of seminar per week. Prerequisites: Graduate standing in HPM and completion of 297 internship. This course is an integrative seminar that builds on the core curriculum requirements of the school, emphasis on HPM specific issues, and students’ degree students advancing to candidacy. After sharing their internship experiences and the impact on career decisions, the students are required to draw on situations from their internship to examine how they have learned by leading fellow seminar participants in facilitated discussions, culminating in a specific management recommendation or policy position. Students will gain exposure to a range of HPM issues based on the experiences of their peers. Each student is also required to produce a 20-page paper and prepare and deliver a formal presentation to seminar participants and invited faculty. The paper will address an HPM topic of interest that has been selected by the student and approved by the course faculty and the student’s academic advisor. Suggested formats for the paper are a policy or strategic management analysis, but other formats may be proposed and approved by the instructor. (SP) Solomon

224A. Health Care Organizations and Environments. (3) Three hours of lecture/discussion per week. Prerequisites: Graduate standing or consent of instructor. Introduction to health administration, focusing on theories of management, organizations, and environments as they relate to the administration of health services. Topics include strategy, organizational environments, history, and theory-driven case studies will be explored. Students undertaking a service-learning project applying HPM methodology will receive 2 hours of credit per week. (SP) Shortell

224C. Health Economics. (4) Four hours of lecture per week. Prerequisites: Graduate standing or consent of instructor. No legal experience or training required. This is a course for nonlawyers in legal issues in the organization and delivery of health care, including regulation, fraud and abuse, physician arrangements, Medicare, managed care, professional practice, patient dumping, health care organizations, contracts, etc. Students will gain an appreciation of the interaction of law, policy, and health care delivery. Case studies, including recent antitrust litigation, false certification and medical-legal cases, will focus on the application and communication of legal principles in complex but common health care decision-making situations. (SP) Staff

225. Legal Basis for Health Care Delivery. (3) Three hours of lecture per week. Prerequisites: Graduate standing or consent of instructor. No legal experience or training required. This is a course for nonlawyers in legal issues in the organization and delivery of health care, including regulation, fraud and abuse, physician arrangements, Medicare, managed care, professional practice, patient dumping, health care organizations, contracts, etc. Students will gain an appreciation of the interaction of law, policy, and health care delivery. Case studies, including recent antitrust litigation, false certification and medical-legal cases, will focus on the application and communication of legal principles in complex but common health care decision-making situations. (SP) Shortell

226. Health Economics. (3) Three hours of lecture and one or one-half hours of discussion per week. Prerequisites: Graduate standing or consent of instructor. This course introduces students to the economics of health and health care. In addition to familiarizing students with the language and tools of health economics, the course will provide an overview of key institutional features of the health economy as well as important research findings in the field. These will be
used to evaluate the economic logic and incentives in competing proposals for health care reform. (F) Dow

226B. Microeconomics of Health Care Policy. (3)
Two hours of lecture and two hours of discussion per week. Prerequisites: A recent graduate course in microeconomics, a second-level undergraduate course in microeconomics, or consent of instructor. An economic and policy analysis of the health care system. It examines integration of the health care delivery system and the roles of the providers and patients. Alternative models of health care system reform are presented and analyzed. (SP) Scheffler

226C. Public Health and the Economy. (3)
Three hours of lecture per week. Prerequisites: Graduate standing or consent of instructor. An introduction to the literature that suggests that the performance of a regional economy affects the health of the population it supports. Controversies in the theoretical and empirical literature are discussed. The implications of the work for public health practice are discussed. (SP) Catalano

226D. International Health Economics. (3)
Three hours of lecture per week. Prerequisites: Graduate standing and knowledge of health policy and consent of instructor. This is a survey of different health care systems in western and eastern Europe, the former Soviet Union, Canada, Japan, Taiwan, and China. Other countries will be added to meet the interests of students. The course examines the structure and financing of the health system in each country and assesses the effectiveness, efficacy, and equity of each system. Students will make a presentation on a country of their choice. (F) Thompson

226E. Advanced Health Economics. (3)
Three hours of lecture/discussion per week. Prerequisites: Doctoral standing or consent of instructor. This course analyzes the health care system through the lens of institutional economics and organization theory. It interprets alternative contracting and reorganizational structures as methods of governance and examines the role they play in the evolving health insurance and health care systems. Theoretical topics include vertical integration, relational contracting and network forms of organization, principal-agent relations, the dynamic capabilities of firms, reputation as a guarantor of quality, and the implications of nonprofit, for-profit, and public ownership. Applied topics include managed integrated delivery systems, organizational chains and franchising, multispecialty medical groups, and health maintenance organizations. (SP) Robinson

227A. Health Care Finance. (3)
Three hours of lecture/discussion per week. Prerequisites: Graduate standing or consent of instructor. This course covers the statistical and financial issues in health care. Topics include analysis of financial statements, cost behavior and profit analysis, pricing of services, planning and budgeting, variance analysis, loss-based estimation, financial ratio analysis, equity markets, debt financing, portfolio investments, and capital budgeting. Course incorporates lectures, case studies, and financial analysis of health care organizations. (SP) Staff

227B. Advanced Financial Management and Regulation of Health Care Institutions. (3)
Three hours of lecture/discussion per week. Prerequisites: Business Administration 203 or consent of instructor. Financial management and regulation of health care institutions, including the role of institutional and governmental policies with regard to reimbursement, incentive systems, public regulation, and control of health care costs. Course is based on a computer game simulation. (SP) Staff

228. Cost-Effectiveness Analysis in Health and Medicine. (3)
Three hours of lecture per week. Prerequisites: 226A or equivalent. This course introduces methods to estimate costs and effectiveness in health services. Specific topics include theory and empirical estimation of cost-effectiveness, effectiveness analysis, and cost-effectiveness comparison. (SP) Staff

229. Public Health and the Law. (3)
Three hours of lecture per week. Prerequisites: Graduate standing or consent of instructor. No previous legal experience or training necessary. This is an introductory course for nonlawyers in selected aspects of the law relating to public health. Major attention is paid to fundamental legal principles, recurring legal issues confronted by health professionals, and the use of law to advance a public health agenda. Emphasis is placed on giving students tools to use when they encounter law in their professional careers. The course is intended for students in all divisions of the School of Public Health. (F) Ashe, Simpson

230. Advanced Health Politics. (3)
Three hours of lecture/discussion per week. Prerequisites: 220A or consent of instructor. Critical analysis of selected issues in health policy and health policy, interest group politics in health, Marxist and materialist interpretation of health policy, and the politics of health care technology, implementation, bureaucracy, and health professions. (F) Hsajin

231A. Analytic Methods for Health Policy and Management. (3)
Three hours of lecture per week. Prerequisites: 142 or equivalent (basic probability and statistics). This course provides an overview of analytic methods that Master’s students in health policy and semimaging should be familiar with. Topics include the linear regression, limited dependent variable models such as logit, design, and analysis of complex surveys (with weighted and clustered sampling), and quasi-experimental designs and propensity score methods with emphasis on nonparametric methods (allowing missing covariates and/or outcomes), to interpret and critique applications in the HPM literature. (SP) Dow

232. Doctoral Seminar in Public Health Applications of Time Series Analysis. (3)
Two hours of lecture and two hours of discussion per week. Prerequisites: Doctoral standing or consent of instructor. An introduction to time-domain analyses of potential interest to public health researchers and practitioners. Applications of univariate and bivariate time-series analysis that test the hypothesis testing will be demonstrated. (F.SP) Catalano

233. Seminar on Place and Health. (3)
Three hours of lecture/discussion per week. Prerequisites: Consent of instructor for MPH students. The purpose of this course is to help doctoral and advanced MPH students to explore and understand the literature that describes and attempts to explain spatial variation in illness. The implications of the literature for public health practice will also be discussed. The course is organized as a seminar in which students will present literature of special interest to them. The presentations will locate the piece in the taxonomy and make connections to the work for public health practice. (SP) Catalano

240A. Biostatistical Methods: Advanced Categorical Data Analysis. (4)
Three hours of lecture and two hours of laboratory per week. Prerequisites: Statistics 200A (may be taken concurrently). This course focuses on the design and analysis of experiments and observational studies that occur in public health, clinical and biological studies. Lectures topics include proportions and counts, contingency tables, logistic regression models, Poisson regression and log-linear models, models for polytomous data and generalized linear models. Computing techniques, numerical methods, simulation and general implementation of biostatistical analysis techniques with emphasis on data applications. Also listed as Statistics C245B. Offered odd-numbered years. (F) Staff

240B. Biostatistical Methods: Survival Analysis and Causality. (4)
Three hours of lecture and two hours of laboratory per week. Prerequisites: Statistics 200B (may be taken concurrently). Analysis of survival time data using parametric and nonparametric models, hypothesis testing, and methods for analyzing censored (partially observed) data with covariates. Topics include marginal estimation of a survival function, estimation of a survival function, estimation of a survival function using data on censored survival times, and Cox proportional hazards model and estimation of a survival function using data on censored survival times. Also listed as Statistics C245A. Offered even-numbered years. (F) Staff

240C. Biostatistical Methods: Model Free Curve Estimation. (4)
Three hours of lecture and two hours of discussion per week. Prerequisites: 142 or consent of instructor. Bio- statistical concepts and modeling relevant to the design and analysis of multifactor population-based cohort and case-control studies, including matching. Measures of association, causal inference, confounding interaction, introduction to binary regression, including logistic regression. (SP) Staff

241. Statistical Analysis of Categorical Data. (4)
Three hours of lecture and two hours of laboratory per week. Prerequisites: 142 and 145 or equivalent, or consent of instructor. An introduction to computational techniques commonly used in a variety of biostatistical applications: Newton, scoring, and EM algorithms for maximization; smoothing methods; bootstrapping; trees and neural networks; Automatic differentiation and quasi-Newtonian optimization methods. Lecture topics include simple data structures that arise in observational survival analysis and genomics, and other biostatistical applications as time permits. Offered even-numbered years. (F) Staff

242A. Biometrical Data Analysis—Pathological Incomplete Data and Pattern Recognition. (4)
Three hours of lecture and two hours of discussion per week. Prerequisites: 142 or 145 or equivalent, or consent of instructor. Survey of classical methods: mixture, clustered, grouped, incomplete, Cox-model, and truncated data simulation and analysis. Offered odd-numbered years. (SP) Taner

242B. Biometrical Data Analysis—Model Free Curve Estimation. (4)
Three hours of lecture and two hours of discussion per week. Prerequisites: 142 or 145 or equivalent, or consent of instructor. Generalized histograms and Gram-Charlier expansions; series invariance, and moments, and weighting techniques, nonparametric regression, variance reduction, smoothing, and equivalency contour estimation methods and other graphical methods. Offered even-numbered years. (SP) Taner

242C. Longitudinal Data Analysis. (4)
Three hours of lecture and two hours of discussion per week. Prerequisites: 142, 145, 241 or equivalent courses in basic statistics, linear and logistic regression. The course covers the statistical issues surrounding estimation of regression coefficients when data are collected over time. The course emphasizes a regression model approach and discusses disease incidence modeling and both continuous outcome data/linear models and longitudinal data (e.g., logistic and Poisson). The primary focus is from a statistical analysis side, but mathematical intuition behind the procedures will also be discussed. The statistical/mathematical ma-
terial includes some survival analysis, linear models, logistic and Poisson regression, and matrix algebra for statistics. The course will conclude with an introduction to software. This course will emphasize realistic applications of survival analysis. Students learn (through lectures and discussions) current issues in biostatistics research. Topics will vary from term to term depending on student demand and faculty availability. Possible topics are bioassays, meta-analysis, epidemiologic and chronic disease models, biostatistical consulting, covariance structure models, bootstrap and jackknife methods, artificial intelligence techniques in biostatistics. (F,SP) Staff

243C. Information Systems in Public Health. (2)
Two hours of lecture/discussion per week. An introduction to new information systems, such as the Internet and interactive television, and how they may be used to improve human health. The course has three objectives: first, to familiarize students with new information technologies; second, to review how these technologies will be used by public health professionals, consumers, health care providers, and others; and third, to study related ethical and legal issues such as privacy, access, and liability. The course is designed for a general understanding of interactive technologies. (SP) Van Brunt

244A. Stochastic Processes in Biology and Health. (3)
Three hours of lecture per week. Prerequisites: A course in linear algebra or consent of instructor. Discrete time processes. Topics include probability generating functions; branching process, random walk, and ruin problem; Markov chains; renewal processes; and applications in biology and health. Offered odd-numbered years. (F) Chiang

244B. Stochastic Processes in Biology and Health. (3)
Three hours of lecture per week. Prerequisites: 244A, a course in linear algebra, or consent of instructor. Continuous time processes. Topics include the Poisson processes; birth processes, death processes, migration processes, a general birth process; a stochastic model of epidemics; birth-death processes; queueing processes; Neyman-Fix processes; survival and stages of disease; finite Markov processes; and illness-death processes. Offered odd-numbered years. (SP) Chiang

245. Introduction to Multivariate Statistics. (4)
Three hours of lecture and two hours of laboratory per week. Prerequisites: 145 or equivalent or consent of instructor. This course examines optimum robust methods for statistical inference regarding causal and non-causal parameters based on longitudinal data in the presence of informative censoring and informative dropouts. The topics presented include multivariate regression models, multiple intensity models for counting processes, and causal models such as marginal structural models and structural nested models. Methods will be illustrated with data sets of practical interest and analyzed in the laboratory section. This course, appropriate for advanced masters and Ph.D. students, provides exposure to a wide variety of topics. Also listed as Statistics C249A. Offered even-numbered years. (SP) van der Laan

246C. Multiple Testing and Loss Function Based Estimation: Applications in Biological Sciences. (3)
Three hours of lecture per week. Prerequisites: 240D or consent of instructor. Statistical computer-intensive methods have become an integral part of the analysis of cross-sectional and longitudinal studies involving the collection of genomic data such as gene expression, single nucleotide polymorphism, and comparative genomic hybridization measurements across the whole genome. These data structures are extremely high dimensional and the parameters of interest are generally high dimensional and the parameters of interest are generally high dimensional. The course will emphasize realistic applications of survival analysis. The course is divided into a series of modules that range in length from 1-4 weeks; causal inference/models of causality; epidemiologic models of disease occurrence and their relationship to time; confounding and bias (e.g., regression coefficient for each gene). This course will present I a unified loss-function-based approach to learning from data such characteristics which relies on general cross-validation methodology to select among candidate estimators, and 3 clustering methods embedded into a statistical framework. Also listed as Statistics C249C. (F) van der Laan

Two hours of lecture per week. Prerequisites: Statistics 200A (may be taken concurrently) or 142, 145, and 245. Formerly 249. The material presented will focus on learning the programming language R, which will be used in the context of reviewing and introducing a number of statistical methods. Four topic areas will be covered in a focused manner in this course. Data management and manipulation in R will be introduced. Students are encouraged to bring their own computers with R pre-installed. This course is designed for a firm grounding in statistical methods using the R statistical software environment. (SP) Selvin

248L. Epidemiologic Methods Laboratory. (2)
Two hours of lecture per week. Prerequisites: 248 or consent of instructor. This course will cover the principles and methods of epidemiologic methods study design, selection, and definition of cases and controls; sampling, data collection, analysis, and inference. Discussion section provides an opportunity to apply methods to problem sets and to discuss issues presented in lectures. (F,SP) Reingold, Smith

250A. Epidemiologic Methods I. (3)
Three hours of lecture and one hour of discussion per week. Prerequisites: 142 (may be taken concurrently). Principles, and methods of epidemiology: study design, selection, and definition of cases and controls; sampling, data collection, analysis, and inference. Discussion section provides an opportunity to apply methods to problem sets and to discuss issues presented in lectures. (F) Selvin

250B. Epidemiologic Methods II. (4)
Four hours of lecture and two hours of laboratory per week. Prerequisites: 250A or an equivalent introductory course in epidemiology or consent of instructor. This course is intended as an intermediate level course in the field of epidemiology. Topics include causal inference; measurement of disease rates; rates, cohort, case-control, survival analysis, and case-control study selection; exposure measurement error; effect modification in each research design are explored in depth; topics in clinical epidemiology including the use of likelihood ratios, receiver operating curves, and the sensitivity, specificity, predictive value of a test; and a brief introduction to regression models, survival analysis, and decision analysis. The readings from the prerequisite course will be supplemented with advanced epidemiology textbooks (Kleinbaum, Rothman, Miettinen). The course is intended to provide a firm foundation for students who will subsequently enroll in 250C. (F) Cotford

250C. Epidemiologic Theory. (4)
Four hours of lecture and two hours of laboratory per week. Prerequisites: 241, 245, 250B, or consent of instructor. This course is a continuation of 250B. The course covers many of the same topics as 250B but explores them in greater depth and breadth. Follow from 250B include causal inference; the interrelation between measures of disease frequency; the theory that underlies case-control studies and the practical issues that result from their interpretation in case-control studies; and further exploration of the quantitative aspects of bias, confounding, propensity scores, and measurement error. An introduction to the theory of ecological studies and mixed model analysis also are provided. Readings are primarily from the epidemiologic methods literature, and problems are based on the evaluation of epidemiologic case studies. The course is divided into a series of modules that range in length from 1-4 weeks; causal inference/models of causality; epidemiologic models of disease occurrence and their relationship to time; confounding and bias (e.g., regression coefficient for each gene). This course will present I a unified loss-function-based approach to learning from data such characteristics which relies on general cross-validation methodology to select among candidate estimators, and 3 clustering methods embedded into a statistical framework. Also listed as Statistics C249C. (F) van der Laan

251A. Practicum in Epidemiologic Methods I. (4)
Three hours of lecture and one hour of laboratory per week. Prerequisites: 250A; 145 or 241B (may be taken concurrently); consent of instructor. A two-semester sequence intended for students in the Epidemiology/Biostatistics MPH program and other qualified graduate students. This two-semester practicum course in data analysis. Students select a research question and learn practical skills to analyze a large database in order to answer the research question. The course teaches use of CMS and SAS in performing univariate analyses; students also learn critically to review scientific literature. Students are required to complete computer assignments, an oral presentation of a literature review with handouts for class, a final presentation, and a paper (e.g., regression coefficient for each gene) course. (SP) Tager

251C. Casual Inference and Meta-Analysis in Epidemiology. (2)
Two hours of lecture per week. Prerequisites: 250A, 250B, or consent of instructor. This course consists of two distinct components: 1) advanced treatment of epidemiologic methods: matched data, spatial analysis, logistic and Poisson regression models; 2) survival analysis: Kaplan-Meier estimation, survival distributions, parametric and semi-parametric survival analysis. Students are encouraged to concurrently enroll in 248L which carries the prerequisite of a working knowledge of the statistical computing language R. (SP) Selvin

252A. Applied Sampling and Survey Design and Analysis. (3)
Two hours of lecture per week. Prerequisites: 245, 250A, or consent of instructor. This course is intended as an intermediate level course in the field of epidemiology. Topics include causal inference; measurement of disease rates; rates, cohort, case-control, survival analysis, and decision analysis. The readings from the prerequisite course will be supplemented with advanced epidemiology textbooks (Kleinbaum, Rothman, Miettinen). The course is intended to provide a firm foundation for students who will subsequently enroll in 250C. The course will cover the basic principles and methods of sampling and survey design. The weekly lecture will cover the principles of sampling and include a discussion of the case studies contained in the class reader. The computer laboratory will consist of exercises that develop skills for using computers to draw samples and to solve sampling problems. The material covered in the computer laboratory will generally correspond to the topics covered in the weekly meetings. Offered even-numbered years. (F) Piazza

252B. Modeling the Dynamics of Infectious Disease Processes. (2-4) Two hours of lecture and three hours of laboratory per week. Prerequisites: Calculus (e.g. MATH 150A, 151A, 249, or equivalent). This course will cover the basic tools required to both critically read modeling papers and to develop and use models as research tools. Emphasis will be placed on using models to understand infectious disease processes and develop and test potential control strategies. The class meeting will consist of both lecture material covering conceptual issues and a computer lab to apply these concepts using standard infectious disease models. (SP) Eisen

252C. Intervention Trial Design. (3) Three hours of lecture per week. Prerequisites: 245 and 250A (may be taken concurrently). Students learn (through lectures and graded student presentations and projects) to design clin-
252D. Introduction to Marginal Structural Models. (4) Two hours of lecture and two hours of discussion per week. Prerequisites: 241, 242C, 245, and for epidemiology students, 250C or consent of instructor. The introductory application of marginal structural models (MSM) will be covered. Students will perform verbal and written presentations of research questions and findings, review published methods and subject-matter papers to evaluate statistical methods. Consists of a two-hour lecture and two-hour session for discussion/review of programming. Newly added topics include comparison to traditional models, data simulation, and Directed Acyclic Graphs. In two-part presentations, students will define and implement research questions. Grades based on participation, written study critiques, programming, in-class evaluation, and final presentation. Three units of credit given to doctoral students or with consent of instructor. This doctoral seminar is designed to provide an understanding of the complex (and often interactive) individual and environmental conditions that increase the risk of psychosocial factors and physiologic function. (SP) Nuru-Jeter

255C. Mental Health and Psychopathology. (3) Three hours of lecture per week; 1 hour of reading or discussion per week. Prerequisites: Consent of instructor. This course will cover the reasons for mental health and mental disorder, the development of diagnostic criteria for detecting mental disorders in the population. Special attention will be paid also to the biological pathways that link psychosocial factors and psychologic function. (SP) Nuru-Jeter

259B. Practical Applications of Epidemiologic Methods in Developing Countries. (3) Three hours of lecture per week. Practical application of epidemiologic methods to study infectious and non-infectious diseases, including surveillance, surveys, case-control studies, and intervention trials. The applications of these methods to the study of infectious and non-infectious disease problems in developing countries will be presented. (SP) Reingold

260A-260B. Principles of Infectious Diseases. (4-4) Four hours of lecture per week. Prerequisites: Upper division course preparation in biology. This course presents general principles of microbial interactions with hosts that result in infectious disease. Common themes are developed using examples of viral, bacterial, and parasitological pathogens that exemplify mechanisms of infectious disease. The epidemiology, public health, host immunology, treatment, and control will be presented for each infectious disease discussed. (F,SP) Riley, Swartzberg

260C. Infectious Disease Laboratory. (2,4) Two hours of lecture and six hours of laboratory per week. This course is split into two modules, each seven to eight and one-half weeks. Students may take a single module for 2 units. Prerequisites: 260A or consent of instructor. Module I: Practice in standard techniques for the isolation, identification, and characterization of infectious agents. Module II: Laboratory safety, use and interpretation of molecular methods to the identification and characterization of infectious agents, vectors, and hosts. (SP) Loretz, Sensabaugh

260E. Molecular Epidemiology of Infectious Diseases. (2-3) Three hours of lecture and one-half hour of discussion per week. Prerequisites: 260A. The course will cover general principles and practical approaches in the use of molecular laboratory techniques to address infectious disease epidemiologic problems. It is designed for students with laboratory skills in the laboratory or in epidemiology, but not both. The principles to be discussed will include the use of molecular techniques in outbreak investigations, characterizations of outbreaks, and the application of disease transmission and quantifying attributable risks in sporadic infections, refining data stratification to assist case-control studies, distinguishing pathovars from non-pathogenic variants of organisms, doing surveillance, and identifying genetic determinants of disease transmissions. Three units if a five-page paper completed. (F) Riley

260F. Infectious Disease Research in Developing Countries. (2) Two hours of seminar per week. The objective of this course is to provide M.P.H. and Ph.D. students with the background material needed for countries to begin to address the complex issues involved in conducting scientific, laboratory-based research in developing countries. We will discuss the many obstacles to establishing and completing research projects, the role of infrastructure, insufficient financial resources, and lack of scientific information and interaction. More importantly, we will identify innovative solutions to overcoming these obstacles. The first half of the course will consist of presentations by U.S. and developing countries investigators who have long-term research experience in Latin America, Asia, and Africa. We will also discuss related issues such as ethical considerations, equitable collaborations, research capacity strengthening. During the second half of the course, students will give presentations on topics of their choice. Offered alternate years. (SP) Harris

261. Advanced Medical Virology. (3-4) Four hours of lecture and six hours of laboratory per week. Consent of instructor. Analysis of viral and host factors that play a role in viral diseases of medical importance. Four units of credit given to doctoral students who write a term paper. Developmental Course Proposal must be approved by their dissertation. (SP) Liu, Botchan, Penmen

262. Molecular and Cellular Basis of Bacterial Pathogenesis. (3) Three hours of lecture/discussion per week and one hour of literature review. Prerequisites: 260A, 260B, or consent of instructor. This course is tailored to graduate and upper-level undergraduate students who have studied the molecular and cellular basis of bacterial pathogenesis. The emphasis will be on model bacterial pathogens of mammals. The course also will include some aspects of bacterial ge-
Examination of Introduction to toxicology covering basic requisites: Graduate standing in environmental health sciences is required to attend a weekly discussion of the primary literature, both current and classic. Each student will be required to present one paper. (SP) Portnoy

264. Current Issues in Infectious Diseases. (2) Three hours of lecture per week. Prerequisites: Second-year Infectious Diseases MPH students only. This course covers real-time health science, social, and policy dimensions of issues involving infectious diseases. Students select one topic for in-depth analysis and present findings in a public debate. Topics vary from year to year. (F) Sausbaugh

265. Molecular Parasitology. (3) Course may be repeated for credit. Three hours of lecture and two hours of discussion for ten weeks. Prerequisites: Upper division courses in molecular biology, parasitology, biochemistry, immunology, microbiology, or consent of instructor. Familiarity with reading primary research is recommended. Advanced course in the molecular aspects of parasite immunology, molecular biology, genetics, biochemistry, and genomics. For each parasite, the food web, transmission routes and social conditions required for optimal propagation will be covered. Focus will be on state-of-the-art research in relation to molecular mechanisms. Students will be presented with parasitic diseases that are of primary health concern and the methods for drug and vaccine development and disease control and prevention. Course content will rely heavily on current literature. (F) Harris

266. Viruses and Human Cancer. (3) One hour of lecture and four hours of discussion per week. Prerequisites: Course in basic virology or microbiology. Topics include the molecular biology of tumor viruses; mechanisms of viral carcinogenesis; in vitro and in vivo characteristics of virally transformed cells; the epidemiology, pathology, diagnosis, treatment, and prevention of viraly induced cancers; problems of proving the etiology of virally induced cancers. A term paper is required. Offered every even-numbered years. (SP) Buehler

266A. Foodborne diseases. (2) One and one-half hours of lecture per week. Prerequisites: Basic knowledge of microbiology. This course will cover public health, microbiological, social, and economical issues related to foodborne diseases. Three areas will be explored: 1) categories, clinical manifestations, and disease processes of foodborne illness; 2) etiological agents causing foodborne illness; 3) investigation and prevention of foodborne disease. The course will discuss different types of foodborne diseases, clinical manifestations, and the interactions between etiological agents (pathogens and non-pathogens) and human hosts. We will also study non-pathogen agents such as heavy metal, pesticide, and toxic chemicals. Furthermore, the course will discuss how to identify the etiological agents in outbreaks and possible measures that can be taken to control them. The risk to the public involving vaccines and education. Finally, we will explore the social and economic issues involved in the food production, distribution, and consumption that contribute to foodborne diseases. (F) Lu

267B. Characterization of Airborne Chemicals. (3) Three hours of lecture/discussion per week. Prerequisites: Graduate standing in environmental health sciences or consent of instructor. Principles underlying the use of air monitoring methods in industry and the environment. Topics include a variety of gases, vapors, and aerosols. Emphasis will be on the detection and quantification of inhaled toxicants; methods for measuring airborne chemicals. (SP) Hammond

267D. Health Impact Assessment. (3) Three hours of lecture per week. Health Impact Assessment (HIA) refers to a diverse set of analytic and communicative practices that aim to inform, influence, and improve decision-making in order to improve the environmental, economic, and social conditions required for optimal population health. This course provides an introduction to HIA with a focus on the need for and application of HIA to land use and transportation planning and development. The objectives of the course include understanding and comparing the range of practices used to conduct Health Impact Assessments in the U.S. and internationally; identifying the opportunities and obstacles for using the environmental health science disciplines in the environmental assessment process; understanding assessment tools and methods for evaluating the health impacts of decisions; and understanding assessment tools and methods for evaluating the health impacts of decisions. (SP) Seto

268C. Industrial Hygiene: Professional Practices. (3) Three hours of laboratory/supervisory or discussion per week. Must be taken on a satisfactory/unsatisfactory basis. Prerequisites: 267A or 267B. Familiarizes students with the professional skills practiced by industrial hygienists in management, labor, and government programs. Introduces students to the occupational environment in selected industries. (SP) Plog

269C. Occupational Biomechanics. (4) Three hours of lecture/fieldwork per week. Overview of ergonomics and occupational biomechanics. Course covers body structure and function, risk factors of upper extremity and low back loading at work. The goal is to identify force and posture, models for risk assessment, anthropometry applied to task and workstation design, tool design, and structure of successful ergonomics program. Students design an engineering intervention to reduce work-related risk factors. Offered alternate years. (F) Rempel

269D. Ergonomics Seminar. (2) Two hours of lecture per week. Prerequisites: Consent or instructor. Readings and lectures in occupational biomechanics. Topics to be covered are muscle, tendon, and joint biomechanics, material handling models, mechanisms of injury, hand tool design, and instrumentation issues. Students will prepare critical reviews of recent publications and design an engineering intervention to reduce work-related risk factors. Offered alternate years. (F) Rempel

269E. Current Topics in Environmental Medicine. (2) Two hours of lecture per week. Topics in environmental medicine will provide students with an overview of the health impacts, disease mechanisms, and public health controversies related to selected environmental exposures. The course will cover established environmental diseases as well as impacts of some emerging contaminants. The focus will primarily be on pathophysiology, issues related to exposure pathways, and the susceptibilities of specific human populations. No prior medical knowledge required. (F) Harrison, Seward

270A. Exposure Assessment and Control. (3) Three hours of lecture for graduate standing or consent of instructor. Direct and indirect methods and procedures for the estimation and control of human exposure to chemical, physical, and biological agents of concern to health in the community and in occupational settings. Includes review of measurement technologies, exposure assessment strategies, and multipathway analyses used by regulatory agencies. Also covers exposure control options and strategies, including administrative procedures, personal protective equipment, and various engineering control approaches. (F) Nicas, Speziale

270B. Toxicology I. (3) Three hours of lecture per week. Prerequisites: Graduate standing or consent of instructor. Introduction to toxicology covering basic principles, dose-response, toxicity testing, chemical metabolism, mechanisms of toxicity, carcinogenesis, interpretation of toxicological data in public health assessment, and target organ toxicity. (F) M. Smith

270B. Advanced Toxicology. (3,4) Three to four hours of lecture per week. Prerequisites: Nutritional Science and Toxicology 110 for three-unit option. The application of toxicology to answer questions about safety and risk. Using a case-study approach, participants analyze and interpret data and apply their knowledge to evaluating the risk presented by exposures to toxic chemicals, including drugs and environmental contaminants. Discussion of current topics of controversy in the field of toxicology. Also listed as Nutritional Science and Toxicology C219. (SP) M. Smith

270C. Practical Toxicology. (2) Two hours of lecture/discussion per week. Must be taken on a satisfactory/unsatisfactory basis. Prerequisites: 270B or Nutrition Science and Toxicology 110 or equivalent course in toxicology. This course will focus on cutting-edge issues in the field of toxicology, such as forensics, pesticide regulation, stem cell research, etc. Many well-known toxicologists, regulators, and consultants from pharmaceutical companies, petroleum industry, private consulting firms, non-profit organizations, and federal regulatory agencies in the Bay Area will be invited to talk to our participating students. Some of the speakers are our school’s alumni who understand exactly what our students need to know before entering the real world. Learning outside the classroom will be another major focus and different from other existing toxicology courses offered at Berkeley. This new class will provide students a chance to visit some of the real-timer real-world toxicology laboratories, and student group assignments or projects. (SP) Zhang

271B. Reproductive Hazards of Industrial Chemicals. (3) Three hours of lecture/discussion per week. Prerequisites: Graduate standing or consent of instructor. Reading in scientific knowledge on the hazards of chemical exposure to human male and female reproduction. Includes the effects of exposures in the environment. Nonchemical hazards to reproduction, e.g., radiation, are not discussed. (SP) Eskenazi

271D. Global Burden of Disease and Comparative Risk Assessment. (3) Three hours of lecture/discussion per week. Prerequisites: Graduate standing or consent of instructor. Introductory epidemiology (250A or equivalent) is recommended. The Global Burden of Disease (GBD) database utilized by who provides estimates of illness, injury, and death by disease type, age, sex, and world region in a consistent and coherent manner. This course will explore the ways such a detailed database makes possible a wide range of new types of analysis of health priorities and the relationship of data will also be introduced. This seminar will also provide an opportunity for reading and discussing the basic assumptions, data limitations, critiques, and methodological difficulties of the GBD. It is intended to be a true seminar relying heavily on class participation. The homework assignments will be greatly facilitated by use of computer spreadsheets. (SP) K. Smith

271E. Science and Policy for Environment and Health. (3) Three hours of lecture per week. Prerequisites: Graduate standing or consent of instructor. Scientific knowledge and analyses are important to the development of public policies that address the impact of the environment on health. The limits of existing knowledge and uncertainties in research result create significant challenges in applying science to answer policy questions. This course examines how scientific information is used in policy decisions. Case studies of current issues address characterization of scientific knowledge, interpretation of science in policy contexts, scientific integrity, and factors in addition to science that influence decisions. Assignments prepare students to effectively translate technical knowledge to multi-disciplinary and lay audiences and to participate in public policy proceedings. Core materials address differences between regulatory and market-based approaches; emerging paradigms including the precautionary principle and environmental justice; key elements of cost-benefit analysis. (SP) Kyle

274. Geographic Information Systems and Remote Sensing in Public Health. (3) Three hours of lecture/laboratory per week. The goal of this course is to familiarize students with applications of Geographic In-
formation Systems (GIS) and remote sensing (RS) in Public Health. Selected case studies will be presented in order to highlight principles, methods, and technical applications. Topics include infectious disease surveillance maps, color theory and visualization, global positions systems (GPS), remote sensing data acquisition, visualization, classification, and analysis. Relevant student projects will be presented for students interested in infectious diseases, vector control, cancer cluster detection, environmental health, and healthcare access. Hands-on exercises and a project will provide practical experiences to use the GIS and RS applications and methods. (SP) Safo

275. Current Topics in Vaccinology. (2) Two hours of lecture per week. Prerequisites: 260A; basic immunology course. This is an advanced infectious disease course designed to cover issues related to the biologic aspects of vaccinology. It will begin with discussions of the concept of immunity, protection, new understanding of cell-mediated and humoral immune response, and mucosal immunity. Then, topics related to the latest developments in recombinant technology, vaccine delivery systems, “naked DNA” vaccines, “designer” vaccines (“edible vaccines”), and the status of AIDS vaccine as a paradigm for new vaccine development will be covered. A seminar format with a question-and-answer period and an outline in the syllabus. This will be followed by 10-15 minute discussion session based on published studies assigned for the week. Two students will lead the seminar. A satisfactory or passing grade will be based on participation in class discussions, presentation and a 5-page paper. Offered alternate years. (SP) Riley

276. Integrity in the Conduct of Research. (2) Two hours of lecture per week. Prerequisites: Graduate students in good standing. This course presents an analysis of the core issues for the responsible and ethical conduct of research in biomedical sciences. Issues pertinent to standards and responsibilities of research conduct, scientific publication practices, research oversight and privileged information, conflicts of interest, collaboration, and use of animals and humans in research will be defined and explored. The legal and regulatory structures, definitions of misconduct and process of misconduct investigations will be presented. Offered odd-numbered years. (F) Stephens

282. Topics in the History of Medicine and Public Health. (2.3) Course may be repeated for credit with consent of instructor. Two hours of seminar per week. Prerequisites: Consent of instructor. A series of lectures and reading assignments designed to provide students with an understanding of selected topics in the history of medicine, public health, and the allied health sciences. The precise content will vary from year to year and may reflect, in part, topics of the student's interest. Students electing to take the course for three units will be assigned a research topic. (F,SP) Hook

C285. Traffic Safety and Injury Control. (3) Students will receive no credit C285 after taking Civil and Environmental Engineering C291A. Three hours of lecture per week. Prerequisites: Environmental Engineering 262 or equivalent. This course applies principles of engineering, behavioral science, and vision science to preventing traffic collisions and sub-sequent injuries. Each student will begin with a didactic lecture on traffic safety and will present a review of the core material. Students will then present a 15-minute presentation detailing an aspect of selected topics in the history of medicine, public health, and the allied health sciences. The precise content will vary from year to year and may reflect, in part, topics of the student's interest. Students electing to take the course for three units will be assigned a research topic. (F,SP) Hook

285. Public Health Injury Prevention and Control. (2) Two hours of lecture per week. Prerequisites: Consent of instructor. Injuries are a major and often neglected health problem with substantial human and economic costs. Injuries are the leading cause of death from the first year of life to age 45, and the leading cause of lost potential years of life. This course provides an historical and conceptual framework within which to consider injuries (both intentional and unintentional) as social, and public health problems. Through review of epidemiology and intervention studies, this course will consider causes and consequences of injuries, and the role of interventions to reduce injuries. (F) Ragland

288A. Preventive Medicine Residency Seminar: Public Health Practice. (1) Two hours of seminar per week for eight weeks. Prerequisites: MD or medical student. This seminar is required for preventive medicine residents for other physicians and medical students interested in preventive medicine and public health practice. It provides an overview of preventive medicine practice, especially those areas covered by the American Board of Preventive Medicine examination in public health and general preventive medicine. The objectives of this seminar are to review basic organization, principles, and practices of public health as they relate to public health practice in government and a project will provide practical experience in the public health workplace. (F) Rutherford, Seward

288B. Preventive Medicine Residency Seminar: Environmental, Occupational, and Aerospace Medicine. (1) Two hours of seminar per week for eight weeks. Prerequisites: MD or medical student. This seminar is required for preventive medicine residents, but is also open to other physicians and medical students interested in preventive medicine practice. It provides an overview of preventive medicine practice, especially those areas covered by the American Board of Preventive Medicine examination in public health and general preventive medicine. The objectives of this seminar are to review basic organization, principles, and practices of environmental epidemiology, occupational medicine, and aerospace medicine and to describe the role of the preventive medicine physician in several subspecialties within public health practice. (F) Rutherford, Seward

288C. Preventive Medicine Residency Seminar: Managed Care and Preventive Medicine. (1) Two hours of seminar per week for six weeks. Prerequisites: MD or medical student. This seminar is required for preventive medicine residents, but is also open to other physicians and medical students interested in preventive medicine practice. It provides an overview of preventive medicine practice, especially those areas covered by the American Board of Preventive Medicine examination in public health and general preventive medicine. The objectives of this seminar are to review basic principles and practices of environmental epidemiology, occupational medicine, and aerospace medicine and to describe the role of the preventive medicine physician in several subspecialties within public health practice. (F) Rutherford, Seward

288D. Preventive Medicine Residency Seminar: Public Health Administration. (1) Two hours of seminar per week for six weeks. Prerequisites: MD or medical student. This seminar is required for preventive medicine residents, but is also open to other physicians and medical students interested in preventive medicine practice. It provides an overview of preventive medicine practice, especially those areas covered by the American Board of Preventive Medicine examination in public health and general preventive medicine. The objectives of this seminar are to review basic principles and practices of public health administration as they relate to the management of a governmental public health agency and to describe the role of the preventive medicine physician as a leader and administrator in those agencies. (SP) Rutherford, Seward

290. Health Issues Seminars. (1-4) Two hours of seminar per week for eight weeks. Prerequisites: Consent of instructor. A series of lectures and activities with second-year students. (F)

293. Doctoral Seminar. (1-4) Course may be repeated for credit. Two hours of seminar per week. Sections 1-8 to be graded on a letter-grade basis. Sections 9-16 to be graded on a passed/not passed basis. Current topics and special issues in the health field. (F,SP) Staff

294. Post-Residency Seminar. (2-3) One hour of seminar per week. Prerequisites: Supervised residency in public health practice. Comparative analysis of field residency experiences as related to academic work, theoretical and practical issues in public health, and professional practice in the student's chosen public health discipline. Emphasis upon integration of concepts and methods with public health student's professional development. (F,SP) Staff

295. Seminars. (1-4) Course may be repeated for credit. One to four hours of seminar per week. (F,SP) Staff

296. Special Study. (1-10) Course may be repeated for credit. Independent study. Designed to permit any qualified graduate student to pursue special study under the direction of a faculty member. (F,SP) Staff

297. Field Study in Public Health. (1-12) Must be taken on a satisfactory/unsatisfactory basis. Supervised experience relevant to specific aspects of public health in off-campus organizations for graduate students. Regular individual meetings with faculty sponsor required. (F,SP) Staff

298. Group Study. (1-8) Course may be repeated for credit. Independent study. Course may be repeated for credit. Sections 1-9 to be graded on a satisfactory/unsatisfactory basis. Sections 10-17 to be graded on a passed/not passed basis. Independent study and research. (F,SP) Staff

Professional Courses

300. Instructional Techniques in Biostatistics. (2) Course may be repeated for credit. Two hours of lecture per week. Must be taken on a satisfactory/unsatisfactory basis. Discussion and practice of teaching methods.
Public Policy (Richard & Rhoda Goldman School of Public Policy)

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Dean: Michael Nacht, Ph.D.
Assistant Dean: Michael R. Treviño, M.Ed., J.D.

Professors

- Ernesto Alonso de Janvry, Ph.D. University of California, Berkeley. International rural economic development
- John W. Elston, Ph.D. Duke University. Policy process, public budgeting, organizational behavior
- W. Michael Hanemann, Ph.D. Harvard University. Environmental and resource economics, philosophy, politics, economics
- Daniel Kammen, Ph.D. Harvard University. Energy, society, development, environment
- David L. Kirp, LL.B. Harvard University. Law, politics, education, gender
- Robert J. MacCoun, Ph.D. Michigan State University. Social psychology, judgment and decision making, civil and criminal justice
- Michael Nacht, Ph.D. Columbia University. U.S. national security policy, international relations and public policy, public management
- Michael O'Hare, Ph.D. Harvard University. Management, urban studies, arts and cultural policy, environmental policy
- John M. Oyugi, Ph.D. Harvard University. Microeconomics, public finance
- Steve Raphael, Ph.D. University of California, Berkeley. Urban and labor policy, economics of racial inequality
- Robert B. Reich, J.D. Yale Law School. Industrial policy, jobs and employment policy, leadership and social change, macroeconomic policy, social and Economic Policy
- Richard Scheffler, Ph.D. New York University. Health economics, health policy, nonprofit organizations
- Suzanne Scutchemer, Ph.D. University of California, Berkeley. Expenditure decisions in public finance, cost-benefit analysis, welfare economics
- Eugene Smolensky, Ph.D. University of Pennsylvania. Public finance, income distribution, poverty policy
- Michael R. Treviño (Assistant Dean), M.Ed., J.D. University of Washington
- David Vogel (The George Qust Chair of Business Ethics), Ph.D. Princeton University. Business-government relations, American and comparative
- Eugene Bardach (Emeritus), Ph.D.
- Robert Berdahl (Emeritus), Ph.D.
- David Gardner (Emeritus), Ph.D.
- Arnold J. Meltsner (Emeritus), Ph.D.
- Allan P. Sandler (Emeritus), Ph.D.
- Percy H. Tannenbaum (Emeritus), Ph.D.

Associate Professor

- Jane Mauldon, Ph.D. Princeton University. Health policy and economics, urban planning, demography

Assistant Professors

- Sean Farhang, Ph.D. Columbia University, J.D. New York University. Law and public policy
- Jack Glaser, Ph.D. Yale University. Social and political psychology, prejudice and discrimination, hate crime
- Rucker Johnson, Ph.D. University of Michigan, Ann Arbor. Social policy
- Margaret Taylor, Ph.D. Carnegie-Mellon University. Engineering, public policy

Associate Adjunct Professor

- Stephen Mauer, J.D. Harvard University. Homeland security, innovation, database policy

Programs

Contemporary society is increasingly complex. Its key characteristics include globalization of the world economy, rapid technological change derived notably from the information and biological sciences; reduced political support in the United States for government-funded programs for the disadvantaged in the context of a society that is increasingly racially diverse; fundamental change in the management of health care; ethnic conflict within many countries that has led to millions of fatalities; and the proliferation of weapons of mass destruction. These and other fundamentals demand sophisticated multidisciplinary approaches to clarify and implement policy changes. Public-private partnerships are increasingly common responses. As a consequence, the need for well-trained policy analysts and managers remains very strong.

The Goldman School of Public Policy prepares students to contribute significantly to public policy as analysts (in the public, nongovernment, and private sectors), managers, and advocates. The strong first-year core curriculum is enhanced by the diversity offered in the second year. The school's program provides students with the benefits of and access to the resources of the entire Berkeley campus. Second-year students can take their elective courses from the full array of campus offerings.

Undergraduate Courses

The undergraduate courses in public policy deal with the substance of public policy, how it is made, how its effects can be gauged, and what the purposes of policy should be. The courses consider both the policy process and particular policy issues. By examining different policy problems in their political and social contexts, students gain a greater sensitivity to the forces which shape and carry out public policies and to the impact of social, political, economic, and legal power.

Courses are designed for students in diverse disciplines and professional schools. There are no prerequisites for enrollment in the courses unless specifically noted otherwise in the course descriptions. The training provided by the courses is useful to those interested in combining the substantive perspectives of the social and ethical sciences with the immediacy of contemporary problems; to those considering professional study; and to the informed and politically aware citizen.

Minor Program

The undergraduate minor in public policy introduces students from other departments and colleges to the field and practice of policy analysis. The minimum requirements are five courses in public policy, at least three of which must be upper division. All classes must be taken at the School of Public Policy.

PP 101 is required of all students in the minor. Students must achieve at least a C average (2.0) in the five courses. When students complete the minor, the school notifies the Office of the Registrar. Completion of the minor will be noted on the students' transcripts of Berkeley work.

Graduate Courses

Through an examination of domestic and some international policy areas, graduate courses enable students to conduct systematic work in the design and assessment of public policies. Among the skills emphasized are those facilitating the application of political, organizational, economic, quantitative, and legal analysis to the full range of the policy process—from policy initiation through policy adoption, implementation, and evaluation. By developing these skills, students from the professional schools and academic disciplines strengthen their strengthened analytical capabilities of direct use when applied to their own field of concentration.

Master's Degree in Public Policy

The professional degree, the Master of Public Policy, is designed to provide students with the knowledge, analytical skills, and sensitivities needed to conduct public policy studies. Students from diverse disciplinary backgrounds are accepted into this program. Those completing the master's program are qualified to take on a variety of significant policy roles in the U.S. and abroad. They work within the public sector at all government levels, in nonprofit organizations, and in private consulting firms. Examples of jobs include staff analyst in a regulatory agency or planning office, special assistant to a senior executive, legislative aide, project officer or program manager in an operating agency or staff member in a nonprofit management consulting or policy research firm.

The two-year master's degree program consists of a required first-year core curriculum, a summer internship, and a second-year devoted mostly to elective courses and a policy study of the student's choice. The core curriculum includes courses in political and organizational analysis, economic analysis, quantitative techniques, legal analysis, and a workshop where students perform policy studies on selected issues.

Coordinated Degree Programs with Other Berkeley Colleges and Schools

The M.P.P. may be earned in combination with an advanced degree from the following Berkeley schools and colleges under a coordinated program:

- M.P.P./J.D. with the Boalt School of Law
- M.P.P./M.H. in health policy and administration with the School of Public Health
- M.P.P./M.A. in international and area studies with the College of Letters and Science
- M.P.P./M.S. with the College of Engineering

Ph.D. in Public Policy

The Ph.D. program prepares students for careers in advanced policy research in academic institutions, research institutes, and government agencies. The Ph.D. program is oriented toward the generation of new knowledge, theories, and methodologies in public policy analysis. The program is small and admission is highly selective.

Further Information

Brochures and information on admissions procedures and student financial assistance are available from the Richard & Rhoda Goldman School of Public Policy, University of California, Berkeley, 2607 Hearst Avenue #7320, Berkeley, CA 94720-7320.
passed basis. Group study on selected public policy topics. Open to freshmen and sophomores. (F,SP) Staff
Upper Division Courses
101. Introduction to Public Policy Analysis. (4) Three hours of lecture and one hour of discussion per week. A systematic and critical approach to evaluating and designing public policies. Combines theory and application to particular cases and problems. Diverse policy topics, including environmental, health, education, communications, safety, and arts policy issues, and poverty. (F,SP) Staff
117AC. Race, Ethnicity, and Public Policy. (4) Three hours of lecture per week. The objective of this course is to use the tools and insights of policy analysis as a means of understanding the ways in which policies are shaped by and respond to issues of race, ethnicity, and cultural difference. The course is organized around a series of discrete policy problems involving issues of race and ethnicity. It is designed to allow for comparative analysis within and across cases to explore the variety of ways in which policy intersects with different racial and ethnic groups. This course satisfies the American Cultures requirement. (SP)

C142. Applied Econometrics and Public Policy. (4) Three hours of lecture and one hour of discussion/ laboratory per week. Also requires: Economics 140 or 141 or consent of instructor. This course focuses on the sensitive application of econometric methods to empirical problems in economics and public policy analysis. It provides background on issues and problems that arise when interpreting social science data and a guide for tools that are useful for empirical research. By the end of the course, students will have an understanding of the types of research designs that can lead to convincing analysis and be comfortable working with large scale data sets. Also listed as Economics C142 and Political Science C131A. Staff

156. Program and Policy Design. (4) Three hours of seminar per week. Studio/laboratory in the design of nonphysical environments. Complements courses in policy analysis, public management, economics, and political science; especially intended to integrate elements of professional programs in public policy and related areas. Students will design, in groups and individually, policies that create value in the public sector, including statutes, regulations, and implementation projects. Comparative reviews will feature invited guests. Undergraduate level of 256. (SP) O'Hare

157. Arts and Cultural Policy. (4) Three hours of lecture per week. Formerly 108. Survey of government policy toward the arts (especially direct subsidy, copyright and regulation, and indirect assistance) and its effects. Readings, field trips, and case discussion. Comparisons through case-centered studies. (F)

C162. Drug, Tobacco, and Alcohol Policy. (3) Three hours of lecture per week. Prerequisites: 101 or a course in introductory microeconomics. Despite many pharmacological, behavioral, and economic parallels, policies regarding tobacco, alcohol, marijuana, cocaine, and heroin have evolved independently. Critics of "big tobacco" have called for its prohibition. Tobacco, cocaine, and heroin have evolved independently. Critics and regulation, and indirect assistance) and its effects. Readings, field trips, and case discussion. Comparisons through case-centered studies. (F)

200. Introduction to Policy Analysis. (4) Four hours of discussion per week. Prerequisites: Open only to students in the Graduate School of Public Policy. The introductory course covers the basic policy analysis method and policy analysis based on microeconomic theory. Policy decisions are confronted with questions of value and moral reasoning. In posing and sharpening those questions, this course provides an understanding of the challenges and responsibilities of policy making in a democracy. Using case studies ranging from abortion and AIDS to nuclear power and Iran-Contra, the course emphasizes the importance of core questions in public policy, including public policy evaluation and the role of comparative analysis. Course examines the political and organizational factors involved in developing new policies, choosing among alternatives, gaining acceptance, assessing implementation, and coping with unanticipated consequences. Materials will include case studies, theoretical, empirical, and interpretive works from several disciplines. (F,SP)

210A-210B. The Economics of Public Problem-Solving. (4) Three hours of lecture and one hour of discussion per week. Prerequisites: Economics 100A or 101A or equivalent. Lectures will cover extensions and applications of microeconomic theory as required for use in practical public policy analysis. Case studies of the techniques will be drawn from diverse policy application domains: welfare reform, national health insurance, public policy and employment, environmental sustainability. Course may vary from year to year and will be announced at the beginning of the semester. Open to students from other departments. (F,SP)

184. The Economics of Public Problem-Solving. (4) Three hours of lecture and one hour of discussion per week. Prerequisites: Economics 100A or 101A or equivalent. Lectures will cover extensions and applications of microeconomic theory as required for use in practical public policy analysis. Case studies of the techniques will be drawn from diverse policy application domains: welfare reform, national health insurance, public policy and employment, environmental sustainability. Course may vary from year to year and will be announced at the beginning of the semester. Open to students from other departments. (F,SP)

190. Special Topics in Public Policy. (1-4) Course may be repeated for credit with consent of instructor. One to five hours each week depending on the topic. Course examines current problems and issues in the field of public policy. Topics may vary from year to year and will be announced at the beginning of the semester. Open to students from other departments. (F,SP)

205. Advanced Policy Analysis. (3) Three hours of seminar per week. Prerequisites: Open only to majors who have completed the core curriculum. Each student will prepare and present an original policy question for discussion. In this research, students will study the interdisciplinary methods, approaches, and perspectives studied in the core curriculum. (SP)

210A-210B. The Economics of Public Problem-Solving. (4) Three hours of lecture/discussion and one hour of seminar per week. Prerequisites: Open only to students in the Graduate School of Public Policy. Theories of microeconomic behavior of consumers, producers, and bureaucrats are developed and applied to specific policy areas. Ability to analyze the effects of alternative policy options, including public policy, and the effects of changes in policy. Policy areas are selected to show a broad range of actual applications of theory and a variety of policy strategies. (F,SP) Friedman

220. Law and Public Policy. (4) Four hours of lecture/discussion per week. Prerequisites: Open only to students in the Graduate School of Public Policy. Formerly 102: an examination of the relationship of public policy to exposing students to primary legal materials, including court decisions and legislative and administrative regulations. Skills of interpretation and legal draftsmanship are developed and practiced, and the relationship of public policy to legal environments and between law and policy are explored through case-centered studies. (F) Kirk

230A. Political and Agency Management Aspects of Public Policy. (4) Four hours of lecture/discussion per week. Prerequisites: Open only to students in the Graduate School of Public Policy. Formerly 212B and 212C. The course examines the political and organizational factors involved in developing new policies, choosing among alternatives, gaining acceptance, assessing implementation, and coping with unanticipated consequences. Materials will include case studies, theoretical, empirical, and interpretive works from several disciplines. (F,SP)

230B. Leadership and Social Change. (4) Four hours of lecture/discussion per week. Prerequisites: Open only to students in the Graduate School of Public Policy. Formerly 212B and 212C. The course examines the political and organizational, and social factors involved in delivering better services, implementing new policies, and empowering groups to more effectively achieve their own ends. Materials will include case studies, theoretical, empirical, and interpretive works from several disciplines. (F,SP) Reich

240A-240B. Decision Analysis, Modeling, and Quantitative Methods. (4-4) Four hours of lecture per week. Prerequisites: Open only to students in the Graduate School of Public Policy. An integrated course on the use of quantitative techniques in public policy analysis: computer modeling and simulation, linear programming and optimization, decision theory, and statistical and econometric analysis of policy-relevant data. The student develops a facility in distilling the policy relevance of numbers through an analysis of case studies and statistical data sets. (F,SP)

Graduate Courses
251. Microeconomic Organization and Policy Analysis. (3) Two hours of seminar and one hour of conference per week. Prerequisites: Business Administration 101B or Economics 200A or equivalent, and consent of instructor. Research seminar to develop policy analyses based on microeconomic theories of organization, including collective demand mechanisms, behavioral theory of regulatory agencies and bureaucracies, and productivity in the public sector. (F) Friedman

C253. International Economic Development Policy. (3) Three hours of lecture per week. Prerequisites: Minimum one semester of graduate-level microeconomics and statistics or consent of instructor. This course emphasizes the development and application of policy solutions to developing-world problems related to poverty, macroeconomic policy, and environmental sustainability. Methods of statistical, econometric, and policy analysis are applied to a series of case studies. The course is designed to develop practical professional skills for application in the international arena. Also listed as Agricultural and Resource Economics C253. (F) De Janury, Sadoulet, Zibelman

256. Program and Policy Design. (4) Three hours of seminar per week. Formerly 206. Studio/laboratory in the design of nonphysical environments. Complements courses in policy analysis, public management, and political science; especially intended to integrate elements of professional programs in public policy and related areas. Students will design, in groups and individually, policies that create value in the public sector, including statutes, regulations, and implementation projects. Comparative reviews will feature invited guests. Graduate level of 156. (SP) O'Hare

257. Arts and Cultural Policy. (4) Three hours of lecture per week. Formerly 208. Survey of government
This course is designed to provide stu-
dents with a deeper understanding of the
basis. Individual study in consultation
hours of seminar per week.

290. Special Topics in Public Policy. (1-4)

295. Supervised Research Colloquium. (1-9)
Course may be repeated for credit. Open to qualified graduate stu-
dents wishing to pursue special research under direction of a mem-
ber of the staff. (F,SP)

296. Ph.D. Seminar. (3) Course may be repeated for credit. Two hours of seminar and one hour of consul-
tation per week. Prerequisites: Must be a Ph.D. stu-
dent in public policy in third year or beyond. Discussion and analysis of dissertation research projects, including conceptual and method-
ological problems of designing and conducting policy research.

298. Directed Advanced Study. (1-12) Course may be repeated for credit. Open to qualified graduate stu-
dents wishing to pursue special study and research un-
der direction of a member of the staff. (F,SP)

299. Independent Study in Preparation for the Mas-
ter’s Essay. (2) Credit is awarded on comple-
tion of the Master’s essay. Prerequisites: Consent of faculty. By arrangement with faculty. Must be taken on a satisfac-
tory/unsatisfactory basis. Open to qualified graduate students wish-
ing to pursue special study and research under direction of a mem-
ber of the staff. (F,SP)

602. Individual Study for Doctoral Students. (1-10) Course may be repeated for credit. Must be taken on a satisfac-
tory/unsatisfactory basis. Prerequisites: For candidates for Ph.D. Individual study in consultation with the major field adviser, intended to provide an op-
portunity for qualified students to prepare themselves for the various examinations required of candidates for the Ph.D. May not be used for unit or residence re-
quirements for the doctoral degree. (F,SP)

Range Management
(College of Natural Resources, Interdepartmental Graduate Groups)

Office: 133 Mulford Hall, (510) 642-6410
espm.berkeley.edu/gradprograms/grad_programs
Chair: James Bartolome, Ph.D.

Professors
Barbara H. Allen-Diaz, Ph.D. Rangeland ecology and management (Environmental Science, Policy, and Management)
Reginald H. Barrett, Ph.D. Wildlife biology and management (Environmental Science, Policy, and Management)
James W. Bartolome, Ph.D. Rangeland ecology and management (Environmental Science, Policy, and Management)
Steven R. Beissinger, Ph.D. Conservation biology (Environmental Science, Policy, and Management)
Donald L. Dahlsten, Ph.D. Forestry, rangeland ecology and management (Environmental Science, Policy, and Management)
Sally J. Folliard, Ph.D. Forest, rangeland ecology and management (Environmental Science, Policy, and Management)
Mary K. Firestone, Ph.D. Soil microbiology, nutrient cycling (Environmental Science, Policy, and Management)
Luisa P. Fortina, Ph.D. Natural resource management (Environmental Science, Policy, and Management)
Dale H. McCulloch, Ph.D. Wildlife biology and management (Environmental Science, Policy, and Management)
Jeffrey M. Romm, Ph.D. Natural resource and environmental policy (Environmental Science, Policy, and Management)
Willard R. Gardner (Emeritus), Ph.D. Soil physics, soil biophysics (Environmental Science, Policy, and Management)
Harold F. Heady (Emeritus), Ph.D. Rangeland ecology and management (Environmental Science, Policy, and Management)

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Harold F. Heady (Emeritus), Ph.D. Rangeland ecology and management (Environmental Science, Policy, and Management)

John A. Helms (Emeritus), Ph.D. Silviculture (Environmental Science, Policy, and Management)
William Z. Lidicker (Emeritus), Ph.D. Mammalogy and ecology (Integrative Biology)
Robert D. Martin (Emeritus), Ph.D. Wildlife fire control and management (Environmental Science, Policy, and Management)
Thelma E. Rowell (Emeritus), Ph.D. Primate behavior and reproductive cycles (Integrative Biology)

Associate Professors
John Battles, Ph.D. Forest community ecology (Environmental Science, Policy, and Management)
Carla D’Antonio, Ph.D. Plant population biology (Integrative Biology)
Lynn Hunt-Lewandrowski, Ph.D. Rangeland ecology and management (Environmental Science, Policy, and Management)

Graduate Adviser: Ms. Allen-Diaz.

Program Overview
The graduate program in range management is ad-
ministered by an interdepartmental group of faculty
members from the Department of Environmental
Science, Policy, and Management and related de-
deptments at Berkeley. The program prepares stu-
dents with a bachelor’s degree in resource man-
agement or related disciplines to pursue advanced
work. Graduate study leads to a Master of Science
degree that serves as the basis for a professional
career in rangeland management. Fields of spe-
cialization include grassland, savanna, and shrub-
land ecology, rangeland rehabilitation, wetland
ecology, and rangeland policy.

Excellent laboratory and field facilities are available for student research. These include several ex-
perimental range properties and large wildland
ranges easily accessible from Berkeley. The faculty
are actively engaged in both theoretical and prac-
tical research.

Doctoral work in range management may be pur-
sued as part of the Ph.D. program in Environ-
mental Science, Policy, and Management.

Religious Studies
(College of Letters and Science)

Group Major Office: Division of Undergraduate and Interdisciplinary Studies, 301 Campbell, (510) 642-2363
ls.berkeley.edu/ugis/religiousstudies

Student Affairs Office: Marty Gajewski, Undergraduate and Interdisciplinary Studies, 301 Campbell Hall, (510) 642-2363

Advisory Committee
Thomas Brady (History)
Vasudha Dairma (South and Southeast Asian Studies)
Thomas Danielewski (History)
John Elson (History)
Susanna Elm (Interdisciplinary Studies)
Marianne Ferme (Anthropology)
Randy Gacy (South and Southeast Asian Studies)
Erich Greuen (History)
Donald Hendel (Near Eastern Studies)
Charles Hirschkind (Anthropology)
David Hollinger (History)
Steven Jomini (English)
Geoffrey Koziol (Near Eastern Studies)
Nikita Kruglov (History)
Margaret Larkin (Near Eastern Studies)
Sabah Mahmood (Anthropology)
Carol Redmount (Near Eastern Studies)
Alexander V. Rospatt (South and Southeast Asian Studies)
Robert Shafir (Near Eastern Studies)
David Storrs (Near Eastern Studies)
Niek Veldhuis (Near Eastern Studies)

Duncan Williams (East Asian Languages and Cultures)
Gerard Casperly, Emeritus (History)
Randolph Starn, Emeritus (History and Italian)
Group Major in Religious Studies

The religious studies major provides opportunities for securing a broad background in the liberal arts while allowing for a focus on a thematic concern or a particular religious tradition. It views religion from a global perspective and combines aspects of the humanities and the social sciences.

The major is open to anyone interested in the symbolic and cultural dimensions of world cultures, the ethical aspects of human societies, and existential issues. It is not restricted to those who have a religious background or are pursuing a religious vocation. The major will be challenging to view religion multicursively and from critical as well as appreciative perspectives.

Graduates in the program have gone on to careers in law, journalism, medicine, international business, counseling, and religious vocations. Others have entered graduate schools in history, sociology, anthropology, international policy, and religious studies.

The program requires both a general understanding of the study of religion as well as a particular emphasis on one specific tradition or thematic concern. The general requirement involves courses that present the methodological approaches to the study of religion such as sociology of religion and psychology of religion and courses that examine thematic issues and cross-cultural phenomena such as myth, ritual, transformative experience, and comparative ethics. The religious traditions that may be included as major fields of emphasis or as supplementary courses include the Jewish, Islamic, Christian, Hindu, Buddhist, and confessional traditions, as well as the religious cultures of China, Japan, Africa, and Native American communities.

Most of the courses available for the program are religion-related courses taught within such departments as history, sociology, and near eastern studies. As courses in these fields are offered, the program offers a wide range of courses on religious studies, including thematic topics of religion and the introductory courses of one (which surveys the world religions, traditions, and the other of which introduces the study of religious phenomena thematically).

The major in religious studies is administered through the Division of Undergraduate and Interdisciplinary Studies. Students are referred to the appropriate current guide.

Lower Division Requirements: Religious Studies 90A-90B, Introductory Topics in Religious Studies (4;4), to be taken before selecting a field of emphasis.

Upper Division Requirements: Two methodological courses from the following: Anthropology 158 (Religion and Anthropology), Geography 107 (Geography of Religions), Sociology 112 (Sociology of Religion), Religious Studies 115 (Mysticism), Comparative Literature 125 (The Mystical Tradition in Literature), Religious Studies 190 (Topics in the Study of Religion) when topic is methodological.

Two thematic courses from the following: Classics 178 (Mythology) or Comparative Literature 185 (Myth and Literature), Religious Studies 115 (Mysticism) or Comparative Literature 125 (The Mystical Tradition in Literature), Religious Studies 190 (Topics in the Study of Religion) when topic is thematic.

Several courses in one of the fields of emphasis (see below).

Additional religious courses to make a total of at least 20 upper division units. Some of these courses must be approved in advance by the major adviser (see the religious studies student affairs officer at the beginning of each semester for a current list of courses on topics in religion).

Fields of Emphasis: The field may be any cross-cultural theme (such as the study of ritual, myth, or ethics) in which three courses are available, a cultural period (such as the religious interaction of medieval Europe or modern Asia), or the study of a single religious tradition (such as Christianity or Buddhism). Courses available in religious traditions include the following:

**Buddhism:** East Asian Languages (Chinese) 120, 122, 130. Additional courses: East Asian Languages (Chinese) 140. South Asian 127, 140. Recommended: Students intending to do graduate work in Buddhism should study Tibetan, Chinese, Sanskrit, Tamil, or Hindi.

**Hinduism:** South Asian 121, 127, 140, 141, 155. Additional courses: History of Art 136A-136B-136C. Recommended: Students intending to do graduate work in Hinduism should study Sanskrit.


**Christianity:** Religious Studies 120A, or History 185A, Religious Studies 120B or History 156A, History 185B or 156A, Religious Studies 115. Additional courses: Classics (Greek) 105, English 107, English 110, 110B, Italian 104A, 104B, Italian 109A, Near Eastern Studies 131, 132, 134, Philosophy 182, 184, Religious Studies 190 (when topic is Christian). Recommended: Students intending to do graduate work in Christianity should study Latin, Greek, or German.

**Minor Program.** Students in the College of Letters and Science may complete one or more minors of their choice, normally in a field both academically and administratively distinct from their major. Students wishing to receive a minor in religious studies must register in the group major office and work out a plan of study with an adviser. Students must take Religious Studies 90A and 90B and five upper division courses chosen from an approved list on file in the group major office. All courses must be completed on a letter-grade basis. A minimum of three of the five upper division courses must be completed at Berkeley, and a minimum overall grade-point average of 2.0 is required.

**Honors Program.** Students may elect to attempt graduation with honors if they have done well in both general university work and the major courses at the beginning of their senior year. Required are upper division courses relevant to the student’s academic program (with consent of adviser) and the submission of a bachelor’s thesis as a culmination of one or two semesters of the senior seminar. Religious Studies 120A or 120B. The thesis must be approved by both the adviser and the student’s thesis director, if these are different.

**Lower Division Courses**

24. **Freshman Seminar.** (1) Course may be repeated for credit as topic varies. One hour of seminar per week. Sections 1-2 to be graded on a passed/not passed basis. The Freshman Seminar Program has been designed to provide new students with the opportunity to explore an intellectual topic with a faculty member in a small enrollment seminar. Seminars are offered in all campus departments and topics vary from department to department and semester to semester. Enrollment limited to fifteen freshmen. (F,S,P) Staff

84. **Sophomore Seminar.** (1,2) Course may be repeated for credit as topic varies. One hour of seminar per week for one semester. One and one-half hours of seminar per week per unit for 10 weeks. Two hours of seminar per week per unit for eight weeks. Three hours of seminar per week per unit for five weeks. Two lecture hours per week, one hour of discussion per week. Three sections 3-4 to be graded on a letter-grade basis. Prerequisites: At discretion of instructor. Sophomore seminars are small interactive courses of 8-12 students and include a written component and two or three in-class discussions. Formerly 124.
C132. Jewish Civilization I: The Biblical Period. (4) Three hours of lecture and one hour of discussion per week. This is the first course in a four-course sequence on the history and culture of the Jewish people. The course covers the biblical period and the period up to the destruction of the second temple. This course will explore the current state of our knowledge, including such topics as the identity of ancient Israel, the religion and mythology, the influence of Israelite religion, the literary features of biblical narrative, and the Dead Sea Scrolls. Also listed as Near Eastern Studies C135 and Undergraduate Interdisciplinary Studies C153.

C134. Jewish Civilization: Middle Ages. (4) Three hours of lecture and one hour of discussion per week. This is the third course in a four-course sequence in the history of Jewish culture and civilization. It covers the middle ages and the early modern period, including kabballah, medieval Yiddish, Talmud, Jewish literature, and the origin of Ashkenazi and Sephardic communities. Also listed as Near Eastern Studies C133 and Undergraduate Interdisciplinary Studies C154. Staff

C135. Jewish Civilization: Modern Period. (4) Three hours of lecture and one hour of discussion per week. This is the fourth course in a four-course sequence in the history of Jewish culture and civilization. It explores the major themes in Jewish history from 1750 to the present, with special attention paid to the transformation of Jewish communal and individual identity in the modern world. Topics to be treated include the breakdown of traditional society, enlightenment and emancipation, assimilation, Hasidism, racial anti-Semitism, colonialism, and anti-Semitism in Europe, North America, and Israel. The multicultural nature of Jewish history will be highlighted throughout the course through the treatment of non-European Jewish narratives alongside the more familiar Ashkenazi perspective. Also listed as History C175B and Undergraduate Interdisciplinary Studies C155. Staff

C161. Religion in Early India. (4) Three hours of lecture per week. Designed as a two-semester sequence, these courses are an introduction to the religions that have flourished since the Indian subcontinent was colonized by Buddhism, Judaism, Jainism, Sikhism, and tribal religions—as well as those that originated in other regions such as Islam, Christianity, and Zoroastrianism. One of the key objectives of this course is chronologically to compare religious traditions not by teaching it separate religious traditions facilitates comparisons and promotes understanding not only of the differences among these religions but also some of their commonalities in philosophy, theology, and praxis. Also listed as South Asian C127. (F,SP) Staff

C163. Religious Movements in Modern India. (4) Three hours of lecture and one hour of discussion per week. Prerequisites: South Asian 127 or 161 or consent of instructor. Formerly 162. Introduces history of religious movements in modern India. Examines the dissemination and reinterpretation of sacred texts and religious practices. Includes a reading of spiritual experience and religious authority at mid-century and the influence of modern novel. Examines religious conversion, transformations of women's roles, and the concept of a secular state in post-independence India. Suitable for religion majors and for students. Also listed as South Asian C128. Staff

C165. Hindu Mythology. (4) Three hours of lecture per week. Formerly 140. Literary and religious aspects of Hindu myths. Reading of selected mythological texts in translation. Also listed as South Asian C140. (F,SP) Goldman

C166. India’s Great Epics: The Mahabharata and the Ramayana. (4) Three hours of lecture per week. Prerequisites: South Asian 5A, 127, 140, or consent of instructor. The course entails substantial selected read-
Undergraduates may concentrate in one of the following areas: a) history and theory of rhetoric, b) public speaking, and c) narrative and image. Majors must complete the following course requirements: Rhetoric 10 and 20 in the lower division, Rhetoric 103A and 103B in the upper division plus five upper-division rhetoric courses in the specified area of concentration, three in the specified area of concentration and two others outside that area. Additionally, majors are required to take one course outside the department related to the specified area of concentration in the major.

Students must complete Rhetoric 10 and 20 with letter grades of C or better before declaring the major. These courses are prerequisite to all upper-division courses unless otherwise specified. Lower division requirements should be completed by the start of the junior year. Rhetoric 103A and 103B should be completed in sequence during the junior year; senior year is recommended for coursework in the specified area of concentration. However, concurrent enrollment in 103A and 103B and other upper division courses in rhetoric is permitted.

A C average in all upper division rhetoric courses and the designated course outside the major is required to finish the major program successfully. No course taken for a Passed/Not Passed grade will be allowed toward credit for the major.

A. History and Theory of Rhetoric. This area focuses upon understanding the development of rhetorical theory and practice from its genesis in the classical period to its situation in the present. Students will consider how the discipline of rhetoric has both shaped and itself been shaped by social, political, technological, and intellectual developments over the course of two millennia. Individual courses under this area explore basic principles of rhetoric’s influence and adaptation, both in theory and in practice, in specific contexts throughout its history. Courses in this area include 105, 110, 111, 132, 136, 137, 138, 140, 173, 174, 175, 177, 181, 196.*

B. Public Discourse. This area focuses upon understanding rhetoric in its symbolic and institutional dimensions, with special emphasis on legal and political forums. Students consider the discourse of law, politics, and society both in theory and in practice, in an attempt to understand the rhetorical nature of political judgment, action, justice, and legitimacy. Individual courses will enable close study of specific problems, concerns, values, modes of interpretation, and strategies of argumentation arising in public forums of the past and present. Courses in this area include 131, 141AC, 153, 155, 157A-157B, 158, 159A-159B, 160, 162AC, 163AC, 164, 165, 166, 167, 168, 170, 171, 172, 179, 196.*

C. Narrative and the Image. This area focuses upon understanding the function of rhetoric in literary, cinematic, and visual texts, with emphasis on the role of form and image in the representation of reality. Students consider the production and reception of narrative “literature”—oral, epic, folktales, lyric poem, novel, etc.—and film, in an attempt to understand narratives of the aesthetic text as a rhetorical analysis of particular literary and visual genres arising in a variety of cultures and historical epochs. Courses in this area include 119, 121A-121B, 122, 123, 124, 125, 126, 127, 129, 133, 134, 135, 136, 138, 139, 140AC, 152, 156, 176, 178, 180AC, 196.*

*If course topic is appropriate

Declaring the Major. Declare rhetoric after completing Rhetoric 10 and 20 with letter grades of C or better. Obtain a Petition to Declare the Major and the rhetoric major application from the undergraduate advisor. The petition is also available from the College of Letters and Science, 113 Campbell Hall. Present a copy of your transcript along with your petition and application to the undergraduate assistant for an approval signature and a brief orientation.

Passed or Not Passed. No course taken on a passed/not passed basis may be used to satisfy a requirement for the major or minor.

Honors Program. Seniors must complete Rhetoric 10, 20, 103A, and 103B and maintain a minimum 3.7 GPA in all Berkeley GPA courses taken to undertake the two-semester honors thesis series, Rhetoric H190A-H190B. Students work under the supervision of a selected rhetoric faculty member. For each year, a thesis is selected for the H190A-H190B sequence may be applied toward graduation as upper division units and fulfillment of one major upper division elective. Honors candidates who satisfy all requirements but take an incomplete in the H190A-H190B series must drop themselves from the degree list or honors will not appear on their official transcripts or diplomas.

Minor Program

The goal of the minor program in rhetoric is to introduce students to the methodological procedures and interdisciplinary approach of a field that examines and poses such questions as: How is philosophy (or law, or politics, etc.) constituted as a field? What kinds of discourses are considered legitimate within this field? And, how is an argument introduced and institutionalized as a result? To this end, minors are required to take Rhetoric 10, 20, 103A, and 103B. This combination provides an overview of philosophical and cultural discourse; theoretical inquiry into law, polity, and society; rhetoric and theory of film, as well as experience in a diachronic orientation of the evolution of these fields. Three further upper division electives from courses numbered between 105-179 and 196 are left to the discretion of the minor student.

Graduate Program

The Department of Rhetoric offers an interdisciplinary Ph.D. program focusing on the study of rhetorical theory and the interaction of the historical concerns of rhetoric with contemporary critical theory across a broad spectrum of disciplines. Rhetoric also offers a special track for graduate students interested in pursuing a Ph.D. in the area of film studies. Crucial to the department’s approach is an investigation into the rhetorical constitution of the argumentation, theory, literature, film, and philosophy. The interests of faculty and graduate students thus range throughout these fields and are informed by a critical interest in the rhetoric of disciplines. During their first two years, graduate students explore major areas in the history and theory of rhetoric and pursue a variety of special topics in seminars. Beginning in their fourth semester, they concentrate in greater depth on preparation for their doctoral qualifying examinations and dissertation research. Six semester courses are required, of which at least five must be rhetoric. They must include Rhetoric 200 (The Origins of the Rhetorical Tradition), 205 (Modern Rhetorical Theory), and a seminar offered in the department whose focus is on rhetorical methods before 1800. Because of the department’s commitment to interdisciplinary research, graduate students are encouraged at every stage of their careers to work with faculty in other departments. Please check with the department for a more detailed description.

Lower Division Courses

Note: Check with department for exact course offerings during the year.

R1A. The Craft of Writing. (4) Three hours of lecture per week. Prerequisites: UC Entry Level Writing Requirement or UC Analytical Writing Placement Exam. Formerly 1A. Rhetorical approach to reading and writing. Argumentative discourse, selected texts; written work from class discussion and analysis of rhetorical strategies. Satisifies the first half of the Reading and Composition requirement. (F,SP) Staff

R1B. The Craft of Writing. (4) Three hours of lecture per week. Prerequisites: 1A or equivalent. Formerly 1B. Intensive argumentative writing drawn from controversy stimulated through selected readings and class discussion. Satisfies the second half of the Reading and Composition requirement. (F,SP) Staff

10. Introduction to Practical Reasoning and Critical Analysis of Argument. (4) Three hours of lecture per week. An introduction to practical reasoning and the critical analysis of argument. Topics treated will include: definition, the syllogism, the enthymeme, fallacy, as well as various non-logical appeals. Also, the course will treat in introductory fashion some ancient and modern attempts to relate rhetoric and logic. (F,SP) Staff

20. Rhetorical Interpretation. (4) Three hours of lecture and one hour of discussion per week. Introduction to the study of rhetorical interpretation, treating how the action of tropes, figures, and performance generates meaning in communication: from fiction and other forms of literature, to politics, to film, and to visual and material culture generally. (F,SP) Staff

24. Freshman Seminars. (1) Course may be repeated for credit as topic varies. One hour of seminar per week. Sections 1-2 to be graded on a letter-grade basis. Sections 3-4 to be graded on a passed/not passed basis. The Berkeley Seminar Program has been designed to provide new students with the opportunity to explore an intellectual topic with a faculty member in a small-seminar setting. Berkeley Seminars are offered in all campus departments, and topics vary from department to department and semester to semester. Staff

30. Rhetorical Theory and Oral Argument. (4) Three hours of lecture and one hour of voluntary discussion per week. Prerequisites: 10 or consent of instructor. Examination of basic principles of rhetoric and strategies of argumentation, with practice in oral argument. (F,SP) Staff

39. Freshman/Sophomore Seminar. Course may be repeated for credit. Three hours of lecture plus film screening per week. Prerequisites: 1A-1B or equivalent. Study of the rhetoric of film in American culture, with emphasis on topics such as the ideology of race and gender, miscegenation, “passing,” and other cultural fantasies. Course satisfies the American Cultures requirement. (F,SP) Staff

41AC. Rhetoric in Film in American Cultures. (4) Three hours of lecture plus film screening per week. Prerequisites: 1A-1B or equivalent. Study of the rhetoric of film in American culture, with emphasis on topics such as the ideology of race and gender, miscegenation, “passing,” and other cultural fantasies. Course satisfies the American Cultures requirement. (F,SP) Staff

41AC. Race and Identity: Performing American Identities. (4) Three hours of lecture per week. This course explores the rhetorical construction of American identity. Drawing from among African American, Native American, Asian American, Latino, and Euro-American oral and written traditions, the course
will explore what it means to be “American.” The course will analyze and compare specific performances of identity and consider how these performances construct, maintain, and revolutionize cultural and ethnic identifications. This course satisfies the American Cultures requirement. (SP) Staff

42AC. Foundations in American Cyber-Cultures. (4) Three hours of lecture and one to three hours of laboratory per week. Students think about and engage in experimental action involving new media and perceptions/performances of embodiment, agency, citizenship, collective action, individual identity, time and spatiality. This course focuses on race, ethnicity, gender, and disability in the U.S., and how the new media reinforce social hierarchies yet offer possibilities of transgression. New media can divide and disenfranchise, yet they also liberate in unexpected ways. This course explores these strands and the links between them. This course satisfies the American Cultures requirement. (F,SP) Staff

84. Sophomore Seminar. (1,2) Course may be repeated for credit as topic varies. One hour of seminar per week per unit for 15 weeks. One and one-half hours of seminar per week per unit for 10 weeks. Two hours of seminar per week per unit for eight weeks. Three hours of seminar per week per unit for five weeks. Sections 1-2 to be graded on a letter-grade basis. Sections 3-4 to be graded on a pass/fail basis. A broad consideration of the relations between new media and perceptions/performances of embodiment, agency, citizenship, collective action, individual identity, time and spatiality. This course satisfies the American Cultures requirement. (SP) Staff

98. Supervised Group Study. (1-3) Course may be repeated for credit. One to three hours of directed group study may be taken on a pass/no pass basis. Prerequisites: Consent of adviser. Instruction for a small group of students on a topic initiated by those students. (F,SP) Staff

Upper Division Courses
Note: Because there have been changes to major and minor requirements, please check with the department for any changes in prerequisites of rhetoric courses or curriculum.

103A. Approaches and Paradigms in the History of Rhetoric. Three hours of lecture and one hour of discussion per week. Prerequisites: Upper division standing. Three hours of lecture per week. Consideration of the rhetorical and cultural principles common to the classical and medieval periods. (F,SP) Staff

103B. Approaches and Paradigms in the History of Rhetorical Theory II. (4) Three hours of lecture and one hour of discussion per week. Prerequisites: Consent of instructor. Formerly 100. A broad consideration of the rhetorical and cultural principles common to the classical and medieval periods. (F,SP) Staff

105. Rhetorical Theory and Practice in Historical Eras. (4) Course may be repeated for credit with different instructor. Three hours of lecture per week. An examination of the relations between rhetoric, discourse, and knowledge in selected historical eras, for example the European Renaissance, the Atlantic Enlightenment, or Victorian Britain. (F,SP) Staff

110. Advanced Argumentative Writing. (4) This course is equivalent to 110M. Three hours of lecture per week plus individual conferences. Prerequisites: Any 1A-1B sequence or upper division standing. Study and practice of advanced techniques for argumentation and writing skills. Enroll in a parallel course to receive equivalent credit. (F,SP) Staff

119. Genre in Film and Literature. (4) Course may be repeated for credit. Three hours per week plus film screenings. Prerequisites: Consent of instructor. Study of a particular genre (e.g., detective/mystery, horror/thriller, melodrama) with attention to theories of genre in popular culture. (F,SP) Staff

121A-121B. Rhetoric of Fiction. (4,4) Three hours of lecture per week. Prerequisites: A is prerequisite to B. A. Form: Definition and techniques of narrative, including voice, point of view, time orders, and related matters. B. Content and Context: Interpretation of authorial intentionality in selected works of modern fiction, in terms of their cultural and historical contexts. (F,SP) Staff

122. Rhetoric of Drama. (4) Three hours of lecture per week. Examination of the way character is created in drama by repetitive rhetorical patterns and the ways themes are defined by manipulation of such patterns. (SP) Staff

124. Rhetoric of Poetry. (4) Three hours of lecture per week. Prerequisites: 30. Consideration of the relationship between the texture of poetic discourse largely defined by figures of speech and overall poetic structures. (SP) Staff

125. Poetics and Poetry. (4) Three hours of lecture per week. Prerequisites: Upper division standing. Studies in the relationships between poetic theory and poetic practice from Aristotle’s Poetics to the present day. (SP) Staff

127. Novel, Society, and Politics. (4) Course may be repeated for credit with consent of instructor. Three hours of lecture per week. This course examines the complex links between novelistic discourse, society, and politics. Topics to be studied may include the social and political vocation of the Bildungsroman and the realist novel; autobiography and the rise of liberal individualism; and the role of the novel in imagining the future. (SP) Staff

128. Novel into Film. (4) Three hours of lecture per week. Close examination of the adaptation of written fiction to the cinema. Focus on the problems arising from the transformation of five novels, which will be read, into their filmed versions. (F,SP) Staff

131. Rhetoric of Religious Discourse. (4) Three hours of lecture per week. Consideration of the rhetoric of hermeneutics or biblical interpretation with special emphasis on the mythological, symbolic, and allegorical language as the bearer of persuasive intention. (F,SP) Staff

131C. Rhetoric of Religious Discourse. (4) Three hours of lecture per week. Consideration of the rhetoric of hermeneutics or biblical interpretation with special emphasis on the mythological, symbolic, and allegorical language as the bearer of persuasive intention. Also listed as Religious Studies C111. (F,SP) Staff

132. Rhetoric, Culture and Society. (4) Three hours of lecture per week. Prerequisites: 103A; upper division standing. An advanced critical practice in the context of social and cultural change with particular reference to the historical transition from pre-industrial to industrial society in the West. (F,SP) Staff

133. Selected Topics in Film. (4) Course may be repeated for credit as topic varies. Three hours per week plus viewing sessions. Prerequisites: Upper division standing. A study of a film topic not covered by the other film categories. This course might focus on the work of a single filmmaker, a particular cinematic “theme,” or a nonhistoric and nongeneric category. (SP) Staff

135. Rhetoric of Narrative Genres in Nonliterary Societies. (4) Course may be repeated for credit with different instructor. Three hours of lecture per week. Investigation of the rhetorical and cultural principles common to various genres of narrative, both prose and poetic, in nonliterary societies. Mythic, epic and folk narratives considered as well as written works from cultures in transition. (SP) Staff

138. Rhetoric and Literature under the Roman Empire. (4) Course may be repeated once for credit with consent of instructor. Three hours of lecture per week. Course will examine the role of rhetoric in rhetorical theory and practice under the early Roman Empire (1st-3rd centuries CE) or the late Roman Empire (4th-6th centuries CE), with special attention to the evolution of rhetorical genres. All texts will be studied in translation. (F,SP) Staff

139. Rhetoric of Autobiography. (4) Three hours of lecture per week. Prerequisites: Upper division standing. Rhetorical analysis of autobiographical discourse, with specific attention to the evolution of the genre in relation to changing modes of human subjectivity. (SP) Staff

139AC. Autobiography and American Individualism. (4) Three hours of lecture per week. Prerequisites: Upper division standing. Three hours of lecture per week. Prerequisites: Upper division standing. Three hours of lecture per week. Prerequisites: Upper division standing. (SP) Staff

140. The Discourse of Qualities. (4) Three hours of lecture/discussion per week. Prerequisites: Any 1A-1B sequence or upper division standing. Study of the discourse of qualities, with focus on how we speak about “qualities” of things as opposed to “qualities” of things. Topics to include questions of taste, aesthetic judgment, expression, and representation. (SP) Staff

141AC. American Cultures as a Problem of Post-Modernity. (4) Three hours of lecture per week. Drawing on fiction and philosophy, this course explores the nature of political, ethical, and aesthetic judgment in the absence of an agreed-upon decision-making procedure, testing the relevance of postmodern theory to American Cultures. This course satisfies the American Cultures requirement. (SP) Staff

150. Rhetoric of Contemporary Politics. (4) Three hours of lecture per week. Examination of the characteristic rhetoric of a variety of manifestations of modern politics. Emphasis on building a theoretical foundation for critically observing and participating in the contemporary political process. (F,SP) Staff

152. Rhetoric of Constitutional Discourse. (4) Three hours of lecture per week. The rhetorical context of Anglo-American constitutional argumentation in the 18th century, its sources, and its implications. Readings include Locke, Montesquieu, and the American Constitution. (F) Staff

152AC. Race and Order in the New Republic. (4) Three hours of lecture and one to two hours of discussion per week. This course will explore how the social issue of race in the new American republic has changed over the 1787. We will investigate perceptions of race at the time of the founding, and try to understand the origins of those perceptions. We will examine how those same perceptions affected the founding and establishment of a new nation and how they have affected our contemporary social and political discourse. This course satisfies the American Cultures requirement. (SP) Staff

155. Discourses of Colonialism and Postcoloniality. (4) Course may be repeated for credit. Three hours of lecture per week. This course primarily explores key concepts and concepts used in the public discourse of European colonialism to justify territorial expansion in the 19th century such as “race,” “culture,” “civility,” and “the Orient,” and their disturbing legacies for the knowledges, practical projects, and problems of contemporary postcolonial societies in a globalizing world. (F,SP) Staff

156. Rhetoric of the Political Novel. (4) Three hours of lecture per week. Investigation of major 19th- and 20th-century works of fiction in which political stances are exploited as dominant themes; close reading of authorial viewpoints and rhetorical strategies. (SP) Staff

157A. Rhetoric of Modern Political Theory. (4) Three hours of lecture per week. Formerly 157. Study
Rhetoric in a specified historical era, both as a basis for modern understanding and as the basis for the development of new thought and action. Study of the textual strategies whereby the masses were recruited to support the political programs of one or two the- orists or an important theme or issue, with close read- ings of major texts as well as attention to important commentators.

159A. Great Theorists in the Rhetoric of Political and Legal Theory. (4) Three hours of lecture per week. Prerequisites: Permission of instructor. This course explores the development of one or two theo-rists or an important theme or issue, with close read- ings of major texts as well as attention to important commentators.

159B. Great Themes in the Rhetoric of Contem- porary Political and Legal Theory. (4) Three hours of lecture per week. Prerequisites: Permission of in-structor. This course concentrates on aspects of 20th century political, social, and legal theory that are too complex to be treated comprehensively as one section of the political theory curriculum.

160. Introduction to the Rhetoric of Legal Discourse. (4) Three hours of lecture and one hour of dis- cussion per week. Prerequisites: 10. The application of rhetorical methodology to all categories of legal texts.

162AC. Rhetoric of American Culture. (4) Three hours of lecture/discussion per week. Prerequisites: Upper division standing. This course explores the ways laws and regulations in the United States identify and classify—or fail to identify and classify—groups in American society. Readings include a wide array of theoretical materials as well as legal and governmental documents. This course satisfies the American Cultures requirement.

164. Rhetoric of Legal Theory. (4) Three hours of lecture per week. Rhetorical methodology applied to close analysis of the argumentative framework of im- portant works in modern legal theory.

165. Rhetoric of Legal Philosophy. (4) Three hours of lecture per week. Consideration of basic philo-sophical issues related to the political and moral foun-dations of the law.

166. Rhetoric, Law, and Politics in Ancient Greece and Rome. (4) Course may be repeated once for credit with different instructor. Three hours of lecture per week. Examination of the role of rhetoric in Greek or Roman legal and political thought. All texts will be studied in translation.

167. Advanced Topics in Law and Rhetoric. (4) Course may be repeated for credit as topic varies. Three hours of lecture per week. Prerequisites: At least one course from 160, 164 or 165. Thorough consid- eration of particular rhetorical themes in the field of leg- al theory, legal philosophy, and legal argumentation.

168. Rhetoric, Law, and Political Theory. 1500-1700. (4) Three hours of lecture per week. Examination of European political and legal discourse from 1450 to 1700.

170. Rhetoric of Social Science. (4) Three hours of lecture per week. Analysis of the ways in which polit- ical scientists, sociologists, anthropologists, economists, and psychologists use and abuse the authority of their claims. Focus is on the presentation of data as fact, the use of quantitative methods, and other “strate- gies” through which social knowledge is transformed into objective information.

171. The Problem of Mass Culture and the Rhetoric of Social Theory. (4) Three hours of lecture per week. Study of the textual strategies whereby the masses and mass culture emerge as objects of anxiety, hope, and scrutiny for social theorists of the 19th and 20th centuries.

172. Rhetoric of Social Theory. (4) Three hours of lecture per week. Rhetorical analysis of theorists from Durkheim and Weber, as well as Marx, Ricardo and Bentham, to Nietzsche and of the role of the political theorist. Specific themes and readings vary from year to year.

174. Rhetoric of Scientific Discourse. (4) Three hours of lecture per week. Examination of the char- acteristic functions of discourse in and about the nat- ural sciences; with particular examination of the ways in which scientific language both guarantees, and at the same time, obscures the expression of social norms in scientific facts.

175. Rhetoric of Philosophical Discourse. (4) Three hours of lecture per week. Introduction to theoretical is- sues involved in applying rhetorical analysis to philo-sophical discourse. Intensive analysis of selected philo-sophical works.

177. Language, Truth, and Dialogue. (4) Three hours of lecture per week. Examination of philosophical di- alogues from Plato to Heidegger. Focus on the inter- action within the dialogue, the participation required of the reader/listener, and the relation of such interaction and participation to thinking, speaking, and knowing.

178. The Rhetoric of the Novel. (4) Course may be repeated for credit. Three hours of lecture/discussion per week. Prerequisites: Any 1A-1B or equivalent. This course is designed to help students develop the skills needed for further analysis of the role that rhetoric plays in the structuring of societies, cultures, and political life. Possible topics include theories of desire and corpo- reality; the figure of woman as object of exchange in historical and contemporary contexts such as Sati, prostitution, servitude and IVF, and the global traffic in female bodies; the notion of the sexual difference functions as a blind-spot in theories of culture, society, and economy.

179. Rhetorics of Sexual Exchange and Sexual Dif- ference. (4) Course may be repeated for credit. Three hours of seminar per week. This course examines the centrality of sexual difference and sexual exchange to the structuring of societies, cultures, and political life. Possible topics include theories of desire and corporeal reality; the figure of woman as object of exchange in historical and contemporary contexts such as Sati, prostitution, servitude and IVF, and the global traffic in female bodies; the notion of the sexual difference functions as a blind-spot in theories of culture, society, and economy.

181. Undergraduate Seminar on the Theory and Practice of Reading and Interpretation. (4) Three hours of lecture per week. Prerequisites: Any 1A-1B or equivalent. An introduction to contemporary modes of reading and interpretation in the humanities, from structuralism through psychoanalysis, with an emphasis on theories of the sign (semiotics). Examples drawn from such fields as con- temporary literature, architecture, history, painting, film, and popular culture.

189. Special Topics. (4) Course may be repeated for credit. Three hours of lecture per week. Group in- struction and investigation of topics not accommodated in regular course offerings.

H190A-H190B. Honors Thesis. (2;2) Tutorial. Stu- dents must take 2 units of H190A and 2 units of H190B. Credit and grade to be awarded on completion of sequence. Prerequisites: Senior standing with a 3.7 GPA in rhetoric and 3.5 GPA overall. Formerly H190A. Independent study under the aegis of a faculty direc- tor culminating in a written thesis. Required of all rhetoric majors desiring to earn the A.B. degree with honors.

194W. Special Topics. (2.5) Three hours of lecture for ten weeks. Prerequisites: Consent of instructor. Group instruction and investigation of topics not accommodated in regular course offerings.

196. Special Topics. (4) Course may be repeated for credit with different topic. Three hours of lecture/sem- inar per week. Prerequisites: Consent of instructor. Course explores the development of one or two theo- rists or an important theme or issue, with close read- ings of major texts as well as attention to important commentators.

198. Supervised Group Study. (1-3) Course may be repeated for credit. Tutorial. Must be taken on a passed/not passed basis. Prerequisites: Junior stand- ing and approval of advisor. Instruction for a small group of students on a topic initiated by those stu- dents.

199. Supervised Independent Study. (1-3) Course may be repeated for credit. Tutorial. Must be taken on a passed/not passed basis. Prerequisites: 3.0 GPA. For special projects that cannot be otherwise accom- modated.

200. Classical Origins of the Rhetorical Tradition. (4) Three hours of seminar per week. Prerequisites: Graduate status. A detailed examination of the de- velopment of Western rhetorical tradition in ancient Greece and Rome. This course is normally required of all graduate students.


230. Advanced Studies in the History of Rhetoric. (4) Course may be repeated for credit as topic varies. Three hours of seminar per week. Prerequisites: Graduate status. For special projects that cannot be otherwise accom- modated.

240E. Political Discourse. (4) Staff

240F. Legal Rhetoric and Philosophy. (4) Staff

240G. Rhetorical Theory. (4) Staff

240H. Rhetorical Theory and Criticism: Gender and Science. (4) Three hours of lecture per week. Can- didate literature has emerged over the last decade arguing for the importance of gender as an analytic category in the history of science. Devoted to an ex- amination of the import of such analyses for our read- ing of more traditional accounts of specific periods in modern scientific history. Will aim at refining the ques- tions that have been posed by feminists, and develop- ing techniques for further analysis of the role that cultural norms of gender have played in the history of science.

241. Advanced Rhetorical Studies of Genre in Me- dia and Literature. (4) Course may be repeated for credit as topic varies. Two hours per week plus film viewings. Prerequisites: Graduate standing or consent of instructor. Advanced investigation on genre as a the- oretical concept in premodern and oral literature and in various media.

243. Special Topics in Film. (4) Course may be re- peated for credit as topic varies. Two hours per week plus film viewings. Prerequisites: Graduate standing or consent of instructor. Advanced investigation on genre as a the- oretical concept in premodern and oral literature and in various media.
250. Rhetoric of the Image. (4) Course may be repeated for credit as topic varies. Three hours of seminar per week. Prerequisites: Graduate standing and consent of instructor. A study of the visual image as a mode of discourse, together with an analysis of the terms in which images have been interpreted and criticized. Focus may be on the rhetoric of a particular image or set of images, or on more broadly theoretical writings about image. (F,SP) Staff

295. Special Study. (1-6) Course may be repeated for credit. Individual tutorial. Prerequisites: Graduate adviser approval. Open to qualified graduate students wishing to pursue special topics under the direction of a member of the staff. (F,SP) Staff

299. Directed Research. (1-12) Course may be repeated for credit. Individual tutorial. Prerequisites: Graduate adviser approval. Open to graduate students who have passed their Ph.D. qualifying examinations. (F,SP) Staff

601. Individual Study for Master's Students. (1-6) Course may be repeated for credit. Individual arrangement. Must be taken on a satisfactory/unsatisfactory basis. Prerequisites: Graduate status. Individual study for degree or language examinations in consultation with staff member. (F,SP) Staff

602. Individual Study for Doctoral Students. (1-6) Course may be repeated for credit. Individual arrangement. Must be taken on a satisfactory/unsatisfactory basis. Prerequisites: Graduate status. Individual study in consultation with faculty director as preparation for degree examinations. (F,SP) Staff

Professional Courses

300. Problems in Teaching Rhetoric. (2) Two hours of lecture per week. Must be taken on a satisfactory/unsatisfactory basis. Prerequisites: Appointment as teaching assistant. Instruction in teaching argumentative writing and rhetorical analysis. (F,SP) Staff

Romance Languages and Literatures

Graduate Office: 5309 DWinnell Hall, (510) 642-8037 spanish.berkeley.edu

Advisers
Albert R. Ascoli, Ph.D. (Italian Studies)
Stephen Botticelli, Ph.D. (Italian Studies)
Dru Dougerty, Ph.D. (Spanish and Portuguese)
David F. Huff, Ph.D. (Spanish)
Ignacio Navarrette, Ph.D. (Spanish and Portuguese)
Nicholas Paige, Ph.D. (French)

Ph.D. Program

The Ph.D. in Romance Languages and Literatures is a doctorate in three Romance languages and literatures (French, Italian, and Spanish, including Spanish-American), with emphasis in the literature or in the linguistics or philological history of one of the three. The program is intended to afford students the opportunity to undertake more detailed comparative studies among the Romance languages and their literary cultures than is normally the case in any single department's program. It is founded upon the belief that a truly comprehensive understanding of any of the major Romance languages and their literature must be nourished by a substantial degree of familiarity with all of them.

Students choose from among three plans whose prerequisites vary slightly. Plan I and II require a B.A. degree in Spanish, Italian, or French, approximately equivalent to the undergraduate major at Berkeley (30 upper division semester units). Plan III requires either a B.A. degree with studies in Spanish, Italian, or French, as for Plans I and II, or a B.A. in linguistics with expertise in at least two major Romance languages. Students are admitted for one of the three plans and present a combination of courses and personal study to satisfy the requirements of the particular plan chosen, developed in consultation with a graduate adviser and designed to prepare the student for the qualifying examination. Students designate one Romance field (choosing from among French, Italian, or Spanish-American) as their emphasis; the remaining two languages and literatures are designated "collaterals." Applications for admission should be submitted to the department of the language and literature of major emphasis.

Plan I requires a detailed knowledge of the major literature, knowledge of the first collateral literature as prescribed in a supplied reading list of 15 items, and knowledge of the master works of the second collateral as prescribed in a reading list of 10 items. In addition, familiarity with the linguistic history of the Romance languages, with emphasis on the major language, is required.

Plan II requires a detailed knowledge of the major literature and a detailed knowledge of one broad, integrated field (period, movement, genre) in both of the collateral literatures, to be chosen by the student in consultation with a graduate adviser and in accordance with the student's special area of interest, or the approach literature. Individually tailored reading lists for both the collateral literatures (15 and 10 items, respectively) are to be developed by the student, as advised and approved by a faculty member as designated by the student. Familiarity with the linguistic history of the Romance languages, with emphasis on the major language, is also required.

Plan III requires an in-depth knowledge of the structure and history (internal and external) of the major language, and an in-depth knowledge of either the history or the structure, depending on whether the student's preferred orientation is diachronic or synchronic, of the Romance language designated as first collateral.

Students are given three options with respect to the second collateral: a) familiarity with the history and structure of the third language; b) familiarity with the history and structure of a related Romance language (Catalan, Galician, Occitan, Portuguese, Rumanian, or Romance-based creoles); and c) a broadly defined field of linguistics (phonology, morphology, syntax, semantics, pragmatics, sociolinguistics), philology (textual criticism, medieval literature), or the approach literature. In the latter case, the student is expected to work under the individualized supervision of a faculty member. The course entitled Linguistic History of Romance Languages, taken as either French C202, Italian C201, or Spanish C202, is also required.

In all plans, work beyond the requirements may be added in other Romance fields (such as Catalan, Portuguese, Occitan, or Rumanian).

General Requirements for all plans include fluency in the major language and reading knowledge of the collateral languages as well as Latin. Students must show a reading knowledge of any one of the collateral languages by passing a written examination that the Department of Spanish and Portuguese coordinates for the program. For the remaining two, students may demonstrate reading knowledge by written examination; or by holding an undergraduate student instructorship in the language in question; by passing, with a grade of B or better, an upper-division or a graduate-level course in the literature of those languages; or, in the case of Latin, by passing Latin 1 and 2. A reading knowledge of German is also recommended.

Students in all three plans must also demonstrate knowledge of the linguistic history of the Romance languages. Students in Plans I and II are offered the option of satisfying this requirement either a) by passing, with a grade of B or better, the graduate course entitled Linguistic History of Romance Languages (French C202; Italian C201, or Spanish C202), or b) by examination during the qualifying examination. Study is guided, in the second case, by a standard reading list. The course is a required part of the program for students in Plan III.

Students in all plans take a qualifying examination. The qualifying examination committee is composed of a minimum of five members: three representing the major field of focus, a designated "outside" member from the student's first collateral, and one additional member representing the second collateral. This examination is oral and normally three hours long.

Once students successfully complete the qualifying examination, they will arrange with a faculty member to direct the dissertation and they will propose the remaining members of the dissertation committee together. The dissertation is expected to embody the results of original research on a subject chosen in consultation with the director.

The normative time allowance for completing the doctoral program is six years.

Graduate Courses

Students in the Romance Languages and Literatures degree program draw upon the full range of courses offered by the Departments of French, Italian Studies, and Spanish and Portuguese. Please refer to departmental listings in this catalog.

Graduate Courses

C213. Old Catalan Language and Literature, (4) Three hours of seminar per week. Reading and analysis of selected texts from the first documents of the Catalan language to the works of the major authors of the 15th century, as well as an introduction to Old Catalan. Also listed as Catalan C285.

Scandinavian

(College of Letters and Science)

Department Office: 5309 DWinnell Hall, (510) 642-4484
is.berkeley.edu/dept/scandinavian
Chair: Karin Sanders, Ph.D.

Professors
John Lindow, Ph.D. Harvard University. Philology, folklore, medieval literature
Cand J. Glover (Emeritus), Ph.D.
Johannes Nordhagen, Ph.D.
James L. Larson (Emeritus), Ph.D.

Associate Professors
Mark Sandberg, Ph.D. University of California, Berkeley. Film history, Norwegian literature, Scandinavian drama, visual culture, historiography.


Gregory P. Nybo (Emeritus), Ph.D.

Lecturers
Sirga Tuomainen, MA. San Francisco State University. English as a second/foreign language.

Major and Graduate Adviser: Ms. Rugg.

Department Overview

The Department of Scandinavian offers undergraduate and graduate instruction in the languages, cultures, and literatures of northern Europe. Languages taught are Danish, Finnish, Norwegian, Swedish, and Old Norse-Icelandic. Lower division Reading and Composition courses based on Scandinavian materials are also offered. Lower and upper division lecture courses, all based on readings in English and open to those without a knowledge of Nordic languages, cover a wide variety of topics. The undergraduate major involves a program integrating the study of Danish, Finnish, Norwegian,
or Swedish language with important aspects of Scandinavian culture and literature, and an under-graduate minor is also available. Graduate programs lead to the M.A. and Ph.D.

The department also administers the program in Celtic Studies (see separate listing).

The Major

The major emphasizes one of four Scandinavian languages (Danish, Finnish, Norwegian, or Swedish), but in their coursework students explore all phases of Scandinavian literature and cultural history from the medieval to the modern across national boundaries. The major affords students the opportunity to pursue interdisciplinary interests through Scandinavian departmental courses and through double majors with other fields. Several of the areas in which Scandinavia has made a major contribution to Western culture are history, drama, medieval literature, folklore, anthropology, linguistics, international studies, peace studies, political science, film, economics, and environmental studies. Students should consult with the undergraduate faculty adviser early on for advising and course planning to assist in achieving their goals.

Total units for the major: 46.

Lower Division (8 units). Two courses taken from the following course sequences: Scandinavian 1A-1B (Swedish), 2A-2B (Finnish), 3A-3B (Norwegian), or 4A-4B (Dutch), or their equivalents.

Upper Division (38 units). Nine upper division courses taken from the following:

1) Two courses of one advanced language course sequence: Scandinavian 100A-100B (equivalent of intermediate Danish, Norwegian, or Swedish, 4 units each), or Scandinavian 102A-102B (equivalent of intermediate/advanced Finnish, 4 units each).

2) Two history courses from the following (8 units): Scandinavian 123 (4), 127 (4), or 128 (4).

3) Three courses in literature, culture, or folklore chosen from the following (20 units): Scandinavian 106, C107, C108, C114, 115, 116, 117, 123, 125, 127, 128, 132, 140A, 140B, 150, C160, 165, 170, or 180 (4 units each).

Note: The undergraduate faculty adviser may approve substitutions for recent courses taken in other departments or colleges in consultation with the undergraduate faculty adviser for help in determining requirement equivalents.

Education Abroad Program

The University of California offers students the opportunity of studying abroad in Sweden (Lund University) and Denmark (University of Copenhagen). These programs feature language study with courses in cultural history, architecture, and other areas within the humanities and social sciences. Many of the courses may be applied to toward language courses and upper division credit in the major or minor. Students must consult with the undergraduate faculty adviser for approval before they leave. Details for programs are available from Berkeley Programs for Study Abroad, 160 Stephens Hall, (510) 642-1356; www.ias.berkeley.edu/bpsa.

Graduate Program

Aims of the Program. The graduate program in Scandinavian is designed for future scholars and teachers in the field of Scandinavian languages and literatures. The program leads to the Master of Arts and Doctor of Philosophy in Scandinavian. The department welcomes proposals for alternative or interdepartmental programs from students with special interests in areas such as art, film, folklore, history, and linguistics. Interested students should submit detailed written proposals for such programs with their application for admission.

Preparation. The A.B. in Scandinavian, or its equivalent, is ordinarily prerequisite to admission. Preparation should include comprehensive knowledge of one Scandinavian language and good reading ability in at least one other, as well as knowledge of the broad outlines of Scandinavian culture and history. Students without preparation may be admitted under the stipulation that deficiencies be corrected.

Master of Arts. Please note that the department does not accept applications for the M.A. as a terminal degree; it is anticipated that all admitted students, subject to satisfactory performance in the M.A. program, will proceed to the Ph.D. program. General requirements: 24 units in Scandinavian, including at least 12 graduate units. Courses from other departments may be accepted with the consent of the graduate adviser. Students will prepare a major and a minor field, the major field to be studied comprehensively. Students presenting a Scandinavian literature as a major field, for example, must work in three periods: Middle Ages, Reformation to Romanticism, and Realism to the present. An understanding of the student's knowledge of both the major and the minor fields with emphasis upon the literature in the major language.

The Ph.D. in Scandinavian. General requirements: an M.A. in Scandinavian, or the equivalent. Students must complete two semesters of work in Old Norse-Icelandic and/or the departmental requirements in two foreign languages, and submit three field papers as examples of their scholarly ability. There are no other specific requirements as to graduate coursework at this level, but students should enroll in units according to Graduate Division guidelines, keeping in mind that continued seminar work will benefit them in taking their Ph.D. qualifying examinations. Seminar courses will also help students establish the skills necessary to write a dissertation and publish scholarly work, while forging collegial relationships with graduate student colleagues and faculty. Students will present three subjects at their qualifying examinations, a major and two minors. Upon passing the qualifying examination the student is advanced to candidacy and begins dissertation research.

Lower Division Courses

1A. Beginning Swedish. (4) Three hours of language instruction and one hour of computer laboratory per week. Students will continue to develop the basic elements of communicative competence in both the spoken and written language within a cultural context. (F) (Staff)

1B. Intermediate Swedish. (4) Three hours of language instruction and one hour of computer laboratory per week. Prerequisites: 1A or consent of instructor. Students will continue to develop the basic elements of communicative competence in both the spoken and written language within a cultural context. (F) Tuominen

2B. Beginning Finnish. (4) Three hours of language instruction and one hour of computer laboratory per week. Prerequisites: 2A or consent of instructor. Students will develop the basic elements of communicative competence in both the spoken and written language within a cultural context. (F,SP) Tuominen

2A. Beginning Finnish. (4) Three hours of language instruction and one hour of computer laboratory per week. Students will develop the basic elements of communicative competence in both the spoken and written language within a cultural context. (F) Staff

3B. Intermediate Norwegian. (4) Three hours of language instruction and one hour of computer laboratory per week. Prerequisites: 3A or consent of instructor. Students will develop the basic elements of communicative competence in both the spoken and written language within a cultural context. (SP) Staff

4A. Beginning Danish. (4) Three hours of language instruction and one hour of computer laboratory per week. Students will develop the basic elements of communicative competence in both the spoken and written language within a cultural context. (F) Staff

4B. Intermediate Danish. (4) Three hours of language instruction and one hour of computer laboratory per week. Prerequisites: 4A or consent of instructor. Students will continue to develop the basic elements of communicative competence in both the spoken and written language within a cultural context. (SP) Staff

RS9A. Reading and Composition. (4) Three hours of lecture per week. Prerequisites: UC Entry Level Writing Requirement or equivalent. Formerly 5A. Reading and composition in connection with the representation of Scandinavia by outsiders and insiders. Satisfies the first half of the Reading and Composition requirement. (F,SP) Staff

RSB. Reading and Composition. (4) Three hours of lecture per week. Prerequisites: RS9A or equivalent. Formerly 5B. Reading and composition in connection with the representation of Scandinavia by outsiders and insiders. Satisfies the second half of the Reading and Composition requirement. (F,SP) Staff

24. Freshman Seminars. (1) Course may be repeated for credit as topic varies. One hour of seminar per week. The Berkeley Seminar Program has been designed to provide new students with the opportunity to explore an intellectual topic with a faculty member in a small-seminar setting. Berkeley Seminars are offered in all campus departments, are open to freshmen from department to department and semester to semester. (F,SP) Staff

39. Freshman/Sophomore Seminar. Course may be repeated for credit as topic varies. One hour of lecture

B prefix=language course for business majors
C prefix=course listing
H prefix=honors course
R prefix=course satisfies R&C requirement
AC suffix=course satisfies American Cultures requirement
*Professor of the Graduate School
†Recipient of Distinguished Teaching Award

Scandinavian / 457
per week per unit. Sections 1-2 to be graded on a letter-grade basis. Freshman and sophomore seminars offer opportunities for students the opportunity to explore an intellectual topic with a faculty member and a group of peers in a small-seminar setting. These seminars are offered in all campus departments; topics vary from department to department and from semester to semester. Enrollment limits are set by the faculty, but the suggested limit is 25. (F,SP)

75. Scandinavian Culture and Society. (4) Three hours of lecture/discussion per week. Course to concentrate upon four historical periods: the Viking Age, the Baroque period, the Romantic period (scientific and political developments), the late 19th century (emphasis on literary and artistic developments), and the 20th century (emphasis on the politics and culture of the welfare state). Readings and discussion in English. (F,SP) Staff

84. Sophomore Seminar. (1,2) Course may be repeated for credit as topic varies. One hour of seminar per week per unit for 15 weeks. One and one-half hours of seminar per week per unit for 10 weeks. Two hours of seminar per week per unit for eight weeks. Three hours of seminar per week per unit for five weeks. Sections 1-2 to be graded on a passed/not passed basis. Sections 3-4 to be graded on a letter-grade basis. At discretion of instructor. Sophomore seminars are small interactive courses offered by faculty members in departments all across the campus. Sophomore seminars offer opportunity for close, regular contact between faculty members and students in the crucial second year. The topics vary from department to department and semester to semester. Enrollment limited to 15 sophomores. (F,SP) Staff

98. Directed Group Study. (1-4) Course may be repeated for credit. Must be arranged. Must be taken on a passed/not passed basis. Prerequisites: Freshman or sophomore standing. Group study of selected topics not covered by regularly scheduled courses. (F,SP) Staff

99. Individual Study. (1-4) Course may be repeated for credit. Individual conferences. Must be taken on a passed/not passed basis. Prerequisites: Minimum 3.0 GPA. Supervised independent study for lower division students. (F,SP) Staff

Upper Division Courses

100A. Scandinavian Languages and Linguistics. (4) Two hours of language instruction and one hour of lecture in the first semester. Prerequisites: 1B, 3B, or 4B or consent of instructor. Formerly 11, 13, 14. In the context of inter-Scandinavian communication, students will further develop their communicative competence and writing abilities. Topics include aural understanding in their own target language (Danish, Norwegian, or Swedish). Workload: Three hours of work outside class per week with one hour of individual work in the Berkeley Language Media Center. Oral and written midterm and final. (F) Möller

100B. Scandinavian Languages and Linguistics. (4) Two hours of language instruction and one hour of lecture in the cultural component per week. Prerequisites: 100A or consent of instructor: Formerly 101, 103, 104. In the context of inter-Scandinavian communication, students will acquire the oral competence necessary to function in authentic situations of language use in terms of grammatical, functional, and sociolinguistic skills. Students will read and interpret literary and nonliterary texts from a cultural perspective. The course uses a flexibl

106. The Works of Hans Christian Andersen. (4) Three hours of lecture per week. Reading and discussion of Hans Christian Andersen’s major works, including fairy tales, short stories, novels, autobiographies, and diaries. Reading and discussion in English. (F,SP) Staff

107. Plays of Ibsen. (4) Three hours of lecture/discussion per week. Reading and discussion of Ibsen’s major plays. Readings and discussion in English. Also listed as Theater, Dance, and Performance ST C107. (F,SP) Sandberg

108. Strindberg. (4) Three hours of lecture per week. Reading and discussion of Strindberg’s major works; emphasis on his dramas and their significance. Readings and discussion in English. Also listed as Theater, Dance, and Performance ST C108. (F,SP) Staff

114. Word and Image. (4) Three hours of lecture per week. This course is designed to sharpen our skills in understanding what happens when the world of images and words meet. Starting with the work from the Western "classic" tradition, we will investigate how word/image constellations operate in a variety of media, including sculpture and poetry, painting and prose, death masks, tableau vivants, photography, and advertising. Course may be repeated with consent of instructor. Readings and discussion in English. (F,SP) Sanders

115. Studies in Drama and Film. (4) Course may be repeated with consent of instructor. Three hours of lecture/discussion per week. Variable subject matter; see departmental announcement for description. Sample topics: the history of the theater in Scandinavia; myths and legends in Scandinavian cinema; 20th century drama; the films of Ingmar Bergman and Carl Dreyer. Readings and discussion in English. (F,SP) Staff

116. Studies in Prose. (4) Course may be repeated with consent of instructor. Three hours of lecture/discussion per week. Variable subject matter; see departmental announcement for description. Sample topics: Knut Hamsun, Kierkegaard, H. C. Andersen, Isak Dinesen, and other storytellers. Readings and discussion in English. (F,SP) Staff

120. The Novel in Scandinavian. (4) Course may be repeated for credit. Three hours of lecture/discussion per week. Reading and discussion of the great Scandinavian novels; the development of the novel. Readings and discussion in English. (F,SP) Staff

123. Viking and Medieval Scandinavia. (4) Three hours of lecture/discussion per week. Internal and external history of Scandinavian culture and civilization from the late eighth century through the 15th century. Readings and discussion in English. (F,SP) Lindow

125. Old Norse Literature. (4) Three hours of lecture/discussion per week. Reading and discussion of some of the Icelandic sagas and selections from the Eddas and skaldic verse. Readings and discussion in English. (F) Lindow

127. Scandinavia from 1520-1800. (4) Three hours of lecture and one hour of discussion per week. Scandinavian society, history, and culture from the Reformation through the Enlightenment. Moller

128. Scandinavia from 1800-the Present. (4) Three hours of lecture per week. (SP) Moller

132. Introduction to Finnish Culture and History. (4) Three hours of lecture per week. Finnish culture, history, society, and arts. Readings and discussion in English. (SP) Lindow

145. Senior Seminar. (2) Course may be repeated for credit. Two hours of seminar per week. Prerequisites: 140A-140B. Intensive study of a single topic, several reports, a longer paper. (F,SP) Staff

149. Major Studies. (1) One hour of discussion per week. Prerequisites: Knowledge of a Scandinavian language. Additional work, for majors in Scandinavian and American Studies, may be arranged for students with permission of the instructor, in connection with one of the following: Scandinavian C107, C108, 115, 116, 117, 120, 165. Students attend lectures and do all written work in the main course and also read assignments in the Scandinavian languages and write a short paper. (F,SP) Staff

150. Studies in Scandinavian Literature. (4) Three hours of lecture per week. Variable subject matter; see departmental announcement for description. Sample topics: Scandinavian romanticism; the Modern Breakthrough; literature by and about women; the political tradition. Readings and discussion in English. (F,SP) Staff

160. Scandinavian Myth and Religion. (4) Three hours of lecture per week. Religious beliefs and practices during the Viking Age in Scandinavia and their manifestation in later writings. Readings and discussion in English. Also listed as Religious Studies C108. (F,SP) Staff

165. Scandinavian Folklore. (4) Three hours of lecture per week. Scandinavian folklore, emphasizing oral narrative traditions (legends and folk belief, folktales, pourquoi stories) and their creative importance as an improvement, riddles, and formulas will also be considered. Readings and discussion in English. (F,SP) Lindow

170. Arctic Folklore and Mythology in Nordic Lands. (4) Three hours of lecture per week. Survey of the folklore and mythology of the principal non-Scandinavian peoples of the Nordic lands: Finns, Saami, Greenland, Inuit. Comparative evidence from circumpolar traditions and from ancient and modern Scandinavian tradition. Readings and discussion in English. (SP) Lindow

190AC. Special Topics in Scandinavian and American Cultures. (4) Course may be repeated for credit as topic varies. Three hours of lecture/discussion per week. Topics on ethnic relations in the United States, with partial focus on the experience of Scandinavians in America. Topics will vary, but may include the study of whiteness and its boundaries, passing and masquerade in film and literature, ethnic identity in the American Midwest, etc. This course satisfies the American Cultures requirement. (F,SP) Rugg

198. Group Study for Advanced Undergraduates. (2-4) Course may be repeated for credit. Directed study. Must be taken on a passed/not passed basis. Prerequisites: Two years of study of one Scandinavian language. Advanced readings and interpretation of Scandinavian texts. (F,SP) Staff

199. Independent Study and Research. (2-4) Course may be repeated for credit. Directed study. Must be taken on a passed/not passed basis. Prerequisites: Two years of study of one Scandinavian language. Courses in Scandinavian literature, culture, or history. Supervised study; restricted enrollment. (F,SP) Staff

Graduate Courses

201A. Old Norse. (4) Three hours of lecture per week. An introduction to the language of medieval Iceland and Norway. Grammar, historical phonology, and texts. (F) Lindow

201B. Norse Literature. (4) Three hours of lecture per week. Prerequisites: 201A or equivalent. Literary production of early Iceland and Norway. Reading of representative texts in the original. (SP) Lindow


202. Early Scandinavian Literature. (4) Three hours of lecture per week. Prerequisites: 201A or equivalent. Variable subject matter; see departmental announcement for description. Course normally focuses on one of two areas: Eddic and skaldic poetry; sagas (royal family, legendary, courtly, epic). (SP) Lindow
Science and Mathematics Education

(College of Letters and Science)

Group Office: 4533 Tolman Hall, (510) 642-4207
Faculty:

Dor Abrahamson, Ph.D. Northwestern University. Mathematics, mathematics education, through the lenses of design-based frameworks
Alice M. Agogino, Ph.D. University of California, Berkeley. Artificial intelligence and expert systems, design theory and methods, engineering education, qualitative reasoning (Mechanical Engineering)
Norma Chang, Ph.D. Carnegie Mellon University. Cognitive processes in science problem solving (Lecturer, Education)
Mason D. Davenport, Ph.D. University of California, Berkeley. Neuroanatomy, environment, asymmetry, hormones (Integrative Biology)
Andrea A. d’Sessa, Ph.D. Massachusetts Institute of Technology. Computers in education, instruction in physics and mathematics, learning/genetic epistemology (Education)
Randi Engle, Ph.D. Stanford University. Classroom discussions in science and mathematics (Education)
Bernd R. Gifford, Ph.D. University of Rochester. Organizational theory, policy analysis, resource allocation policies, micro-implementation, fiscal stress management, technology and education (Chancellor’s Professor)
Marcia C. Linn, Ph.D. Stanford University. Scientific reasoning, computer technology, programming and problem solving, individual differences associated with gender (Education)
Carolyn Merchant, Ph.D. University of Wisconsin. Science and technology; historical and philosophical perspectives, cultural and ethical issues, gender (Environmental Science, Policy, and Management)
Michael Rennie, Ph.D. University of Pittsburgh. Problem solving, knowledge representation and reorganization, computation and space, wave physics, intelligent tutoring systems (Education)
Alan H. Schoenfeld, Ph.D. Stanford University. Psychology of mathematical belief systems (Education and Mathematics)
Angélica Serrano, Ph.D. Cornell University. Inorganic and Physical chemistry (Chemistry)
Barbara Y. White, Ph.D. Lawrence Berkeley National Laboratory, Department of Energy. Artificial intelligence. AI models of scientific and mathematical expertise, computer-based learning environments, metacognition, human interfaces, Education and Computer Science (Chair of SESAME)
Affiliated Member:

Michael Clancy, Ph.D. Stanford University (Electrical and Computer Sciences)

Description of the Program

The Group in Science and Mathematics Education offers a graduate program designed to afford students the opportunity to engage in a variety of research experiences. The program is intended for students who have completed an undergraduate degree in science or mathematics and who are interested in pursuing advanced research in one of the many areas represented by the faculty members associated with the Group.

Admission Requirements

To enter the program, students must have an excellent academic record with a bachelor’s or, preferably, a master’s degree in a natural science, mathematics, or engineering/computer science. Experience teaching or tutoring others, or working in educational settings is desirable but not required.

More detailed information about the program and its requirements can be obtained from the group office.
Languages offered by this department that can be used for the major are Russian, Polish, Czech, BCS (Bosnian, Croatian, Serbian), Bulgarian, Hungarian, Armenian, and Georgian. The following languages have been offered periodically in our department or other departments and may, by special arrangement, be used for this major track: Kazakh, Ingush, Chechen, and Lithuanian.

2) One lower division course in the Slavic Department: Slavic 50, Introduction to Russian, East European and Eurasian Cultures. With permission of the major adviser, it may be possible to substitute another lower division course in the department relevant to the major, e.g., Slavic 37, 39, 45, 46.

Upper Division (28 units): 1) One cultural topics course: Slavic 115, Topics in Russian Cultural History, or Slavic 158, Topics in East European and Eurasian Cultural History.

2) One relevant course in the Department of History, e.g., History 171A, 171B, or 171C; 172; 173; 175A; 177.

3) Five courses chosen from the upper division offerings of the Slavic Department, and the following courses from outside departments: Geography 55C; Political Science 129B, 129C, 141A, 141C; Sociology 181. With permission of the major adviser, students may substitute relevant courses from the following departments: Anthropology, Art, Art History, Comparative Literature, Economics, Journalism, Legal Studies, Peace and Conflict Studies, Theater, Dance, and Performance Studies.

Up to three elective courses may be taken in departments other than Slavic.

Up to two upper division language courses in the Slavic Department, taken in addition to the initial four semesters of language, can be counted toward this requirement. Up to two lower or upper division courses in a second language relevant to the program of study can be counted toward this requirement.

This major track integrates the study of Russian language, literature, institutions, and culture. Students majoring in Slavic literature in the original (Slavic 150, 160, or 170; or with the permission of the major adviser, Slavic 158).

4) 7 units of two additional courses in the relevant literature in the original (Slavic 151-152, 161-162, or 171-172).

5) A plan of study, designed in advance in consultation with the major adviser, consisting of three relevant courses (9-12 units) in Russian or European literature and history.

Total lower division units: 26
Total upper division units: 27-30

Honors Program

Slavic majors with a minimum GPA of 3.3 overall and in courses for the major are invited to consult with members of the faculty and the major adviser in the spring of their junior year about the honors program and a thesis topic. Requirements for the honors program in Slavic include: 1) an additional upper division Slavic course chosen by the student, and 2) an honors thesis course (H195). In the honors thesis course, normally taken during the fall semester of the senior year, the student will write a thesis under the direction of a member of the faculty (the thesis director). In order to enroll in H195, students must file an application with the department (available from the Undergraduate Student Affairs Officer). This application includes a preliminary statement of the thesis topic and the names and signatures of the members of the honors committee, consisting of a faculty director and one additional faculty member, who also reads the completed thesis, and the department chair.

Minor Programs

The department offers minors in a) Russian language, b) Russian literature (requiring no knowledge of Russian), c) Russian language, literature, and culture, and d) Russian languages/literatures with an emphasis in either Czech, Polish, or BCS (Bosnian, Croatian, Serbian) language and literature.

Requirements

The basic course requirement for each of the minors is five upper division courses, all completed for a letter grade. Three of them must be completed at Berkeley. The minor is in a field academically distinct from the student’s major. An overall grade-point average of 2.0 in upper division courses applied to the minor program is required. The minor can be declared the semester after all courses are completed for the minor or up to two weeks past the date of graduation. A Confirmation of Minor form (available from the Un-
dergraduate Student Affairs Officer) must be completed with the major adviser (who must be able to review and keep a copy of the student’s unofficial transcript). Note: The minor in Russian language is not open to native speakers of Russian.

Minor in Russian Language, Literature, and Culture. Prerequisites: Four semesters of elementary and intermediate Russian (Slavic 1-4 or equivalent).

Five upper division courses (3 or 4 units each) in Russian language and Russian or other Slavic literatures and cultures. Students may choose courses in any combination, in consultation with the major adviser. A course from another related program (for example, Comparative Literature) may be substituted with approval of the major adviser.

Total lower division units: 20
Total upper division units: 15-20

Minor in Russian Language. Prerequisites: Four semesters of elementary/intermediate Russian (Slavic 1-4 or equivalent).

Four semesters of advanced Russian (Slavic 103A-103B, plus two courses chosen from Slavic 104A, 104B, 180, 181, 182, 188); advanced Russian conversation (Slavic 120A or 120B).

Total lower division units: 20
Total upper division units: 16-20

Minor in Russian Literature. Prerequisites: Surveys of Russian literature (Slavic 45, 46).

One course on the culture of Russia or other Slavic nations (chosen from Slavic 138, 140, 146, 147A, 147B, 148, 150, 160, 170).

Four courses in Russian literature (chosen from Slavic 132, 133, 134A-134B-134C-134D-134E-134F-134N, 136, 140, 180, 181, 182, 188).

Total lower division units: 6
Total upper division units: 19-20

Minor in Czech, Polish, or BCS (Bosnian, Croatian, Serbian) Language and Literature. Prerequisites: appropriate first-year language sequence (Slavic 25A-25B, 26A-26B, or 27A-27B) or equivalent.


Literature survey (Slavic 150, 160, or 170).

Two courses in the relevant literature (Slavic 151 and 152 or 161 or 162 or 171 or 172) or substitutes approved by the major adviser.

Note: The minors in Czech, Polish, or BCS (Bosnian, Croatian, Serbian) are not open to native speakers of these languages.

Total lower division units: 10
Total upper division units: 17-18

Education Abroad

The Slavic Department actively encourages students to participate in study abroad programs in Russia and other Slavic countries. Through the University of California’s Education Abroad Program, students may spend a full semester in Moscow, which provides intensive work on Russian language, literature, and culture. There is also a program in Budapest featuring Central European studies. Other institutions also offer programs in Russia and other Slavic lands, both during the school year and summer. Please consult with the major adviser for information about these programs.

Student Organizations

The Slavic Student Association, in conjunction with the Berkeley Chapter of Dobro Slovo, the National Slavic Honor Society, sponsors social events and social activities for undergraduate students who are interested in the languages, culture, politics, and history of Slavic peoples.

Our campus hosts many Slavic-related lectures, concerts, films, and other events. A weekly Russian conversation hour is one of the Berkeley Slavic Department’s most lively institutions. The Polish Circle and Czech Circle meet regularly for discussions and social events. Film showings of classic and contemporary films from Russia and other countries, are periodically organized by graduate students.

Certificate in Russian and East European Studies

Slavic students who wish to enroll for the certificate must be in the Ph.D. program and have completed one year of study. Students who wish to begin work for the certificate earlier need the approval of their graduate adviser. See the index and the graduate assistant for additional information.

Admission to Graduate Study

Candidates for higher degrees must have completed an undergraduate major program in Slavic languages and literatures or received equivalent training. Prospective and current students are encouraged to acquire a background in other related fields: European Languages and literatures (especially French, German, Italian and English), literary theory, Russian and Western European intellectual history are useful for candidates in literary studies; for those in linguistics, preparation in French, German, Greek or Latin, and/or in general and comparative linguistics is desirable.

New students admitted to the Ph.D. program with an M.A. in Slavic or a related field from another institution are required to pass a screening (permission-to-proceed) examination. Continuing students who have earned the M.A. degree from this department may be recommended for admission to the Ph.D. program following successful performance on the M.A. comprehensive examinations and demonstrated aptitude for advanced work.

Graduate Programs

M.A. and Ph.D. programs are offered in Russian, Polish, Czech, Bulgarian, and BCS (Bosnian, Croatian, Serbian) each with an emphasis in literature or linguistics. Detailed descriptions of requirements are available from the department. Described below are programs focusing on Russian literature and on linguistics. Students who choose other Slavic literatures as their major field are offered individual programs of study.

M.A. Coursework. Russian Literature Program: a) Required skills and methods courses: Comparative Literature, Slavic literatures as their major field are offered in the major language, stylistics, and c) One period in the major language, stylistics, and c) One period or genre literature course.

All candidates for the M.A. must demonstrate advanced proficiency in their major language, pass the department’s reading examination, and pass two written and one oral comprehensive examinations. They must pass a reading examination of French or German or, for Literature majors, take two semesters of instruction in a second Slavic language.

Ph.D. Requirements.

Linguistics: The Ph.D. program in Slavic linguistics consists of a) Additional coursework in literary history (including the Medieval and early Modern periods) and theory; participation in research seminars and independent research. In addition, students develop reading knowledge of at least two other Slavic languages and literatures, and two semesters of a third Slavic language. b) Additional courses and seminars in two of three fields of specialization—grammatical analysis and theory, structural and cultural history of a major language, and comparative philology. c) An extended written research project under faculty supervision and evaluation on a topic relevant to the student’s field of study and interests. d) Written and oral Ph.D. examinations. e) A dissertation.

All candidates for the Ph.D. must pass a written and oral examination in their major Slavic language and demonstrate reading knowledge of at least two languages other than their major language (to be selected from French, German, and a second Slavic language).

Instruction in language-teaching methodology is provided for graduate student instructors and prospective teachers of Russian, Polish, Czech, and BCS (Bosnian, Croatian, Serbian). Internships (Slavic 310) are available in the teaching of literature or Slavic linguistics.

Czech

Lower Division Courses

26A-26B. Introductory Czech. (5-5) Five hours of lecture per week. Prerequisites: 26A is prerequisite to 26B. Beginner’s course. Sequence beginning fall. (F.SP) Staff

Upper Division Courses

116A-116B. Advanced Czech. (4,4) Course may be repeated for credit as topic varies. Three hours of lecture per week. Prerequisites: 26B is prerequisite to 116A, 116A is prerequisite to 116B. Sequence begins fall semester. (F.SP) Staff

160. Survey of Czech Literature. (3) Three hours of lecture per week. Outline history of Czech literature from the 10th century to the present, including medieval literature of the 14th century, the National Revival of the 19th century, and the modern period. No knowledge of Czech required. Staff

161. Readings in Czech Literature. (4) Course may be repeated for credit with consent of instructor. Three hours of lecture/discussion per week. Prerequisites: 116A. Selected readings in Czech, tailored to the academic interests of students enrolled. Staff

162. Topics in Czech Language and Literature. (3) Course may be repeated for credit with consent of instructor. Three hours of lecture per week. Prerequisites: 116A (may be taken concurrently). Studies in
Polish

Lower Division Courses

25A-25B. Introductory Polish. (5,5) Five hours of lecture per week. Prerequisites: 25A is prerequisite to 25B. Beginner’s course. Sequence beginning fall. (F,SP) Staff

Upper Division Courses

115A-115B. Advanced Polish. (4,4) Course may be repeated for credit as topic varies. Three hours of lecture per week. Prerequisites: 25B is prerequisite to 115A; 115A is prerequisite to 115B. Sequence begins fall semester. (F,SP) Frick

151. Readings in Polish Literature. (4) Course may be repeated for credit with consent of instructor. Three hours of lecture/discussion per week. Prerequisites: 115A. Selected readings in Polish tailored to the academic interests of students enrolled. Frick

Russian Language

Lower Division Courses

1. Elementary Russian. (5) Five hours of lecture and two hours of language laboratory per week. Beginner’s course. (F,SP) Staff

2. Elementary Russian. (5) Five hours of lecture and two hours of language laboratory per week. Prerequisites: 1, 14A, or equivalent. (F,SP) Staff

3. Intermediate Russian. (5) Five hours of lecture and one hour of language laboratory per week. Prerequisites: 2, 24A. Formerly Russian 5. (F,SP) Staff

4. Intermediate Russian. (5) Five hours of lecture and one hour of language laboratory per week. (F,SP) Staff

5. Introductory Russian for Heritage Speakers. (3) Three hours of lecture per week. Prerequisites: Oral proficiency in Russian; placement test and consent of instructor. The course is aimed at “heritage speakers” of Russian, i.e., those who grew up speaking Russian in the family without a native Russian’s full educational and cultural background. Introductory course teaches basic skills of literacy, grammar, and reading. Students with advanced reading proficiency should consider Slavic 114. (F,SP) Staff

Upper Division Courses

101. Advanced Russian Phonetics and Oral Performance. (1-3) Course may be repeated for credit. Three hours of lecture per week. Prerequisites: 4, 14D or equivalent. Aimed at both undergraduate and graduate students, this course helps students to improve their pronunciation, bringing it closer to the native level. The course teaches a whole spectrum of oral speech performance, including phonetics, intonation, and rhetoric, taking into account different functional styles. Course may be taken for 1 unit (5 weeks: basic skills), 2 units (10 weeks: advanced skills) or 3 units (15 weeks: advanced phonetics and performance). (F,SP) Alexeev

103A-103B. Advanced Russian. (4,4) Four hours of lecture per week. Prerequisites: 4, 14D, or equivalent. Course covers three main aspects of advanced Russian: grammar, syntax, and reading. Grammar is reviewed. Course taught in Russian. (F,SP) Alexeev

105A-105B. Advanced Russian/English/Russian Translation. (1-3;1-3) Course may be repeated for credit. Three hours of lecture per week. Prerequisites: 1, 2, 3, 4 or equivalent, or consent of instructor. Advanced training in both oral and written translation skills covering various areas of politics, business, technology, law, science, and culture. Elements of literary and poetic texts will be taken for oral test (5 weeks: basic translation skills), two units (10 weeks: advanced skills), or three units (15 weeks: professional skills). (F,SP) Alexeev

109. Business Russian. (3) Course may be repeated for credit. Three hours of lecture per week. Prerequisites: 103B or equivalent; consent of instructor. This course is designed for students with a good command of basic Russian who would like to gain the vocabulary of business transactions in Russian to be able to establish actual contacts with Russian businesspeople, to participate in business negotiations, to complete business contracts in Russian, and to read Russian business magazines and newspapers. Elements of the business law of Russia will also be discussed. (F,SP) Alexeev

114. Advanced Self-Paced Russian for Heritage Speakers. (1-6) Course may be repeated for a maximum of 6 units. Individual conferences. Prerequisites: Advanced speaking and reading proficiency in Russian; placement test and consent of instructor. The course is aimed at “heritage speakers” of Russian, i.e., those who grew up speaking Russian in the family without a native Russian’s full educational and cultural background. The advanced course aims at building a sophisticated vocabulary, developing advanced reading ability, formal knowledge of grammar, and complete writing competency. The course is organized around students’ individual needs and abilities. The course can be taken for two semesters not to exceed the maximum of 6 units. Students with no or rudimentary reading proficiency should consider Slavic 6. (F,SP) Staff

120A-120B. Advanced Russian Conversation and Communication. (2-3;2-3) Course may be repeated for credit. Two to three hours of lecture per week. Prerequisites: 4 or equivalent. Formerly 120. Aimed at fostering advanced conversation and communication skills, this course explores Russian culture through communication. Contains reading, films, vocabulary building, listening exercises, and speaking activities. The course can be taken for two or three credits; for two credits, attendance is required for two classes per week; for three credits, three classes per week. (F,SP) Staff

120A-120B. Advanced Russian Conversation and Communication. (2-3;2-3) Course may be repeated for credit. Two to three hours of lecture per week. Prerequisites: 4 or equivalent. Formerly 120. Aimed at fostering advanced conversation and communication skills, this course explores Russian culture through communication. Contains reading, films, vocabulary building, listening exercises, and speaking activities. The course can be taken for two or three credits; for two credits, attendance is required for two classes per week; for three credits, three classes per week. (F,SP) Staff

Upper Division Courses

45. Nineteenth-Century Russian Literature. (3) Three hours of lecture per week. Development of Russian literature from Pushkin to Chekhov. No knowledge of Russian required. Prerequisite: 103A-103B or equivalent. (F,SP) Golburt

46. Twentieth-Century Russian Literature. (3) Three hours of lecture per week. Development of Russian literature from 1900 to the present: modernism, Soviet, and emigre literature. No knowledge of Russian required. Prerequisite to admission to the Slavic major and recommended for prospective graduate students. (SP) Match; Staff

Upper Division Courses

130. Medieval Russian Culture. (3) Three hours of lecture per week. Introduction to Eastern Orthodox culture of Old Russia, including literature, painting, and other visual arts. Zhivov, Staff

131. Literature, Art, and Society in 20th Century Russia. (4) Course may be repeated for credit as topic varies. Three hours of lecture per week. A lecture course examining Russian literature and culture in the 20th century. The course will focus on the interaction of literature, other artistic forms (painting, photography, or film), and broader social and ideological changes in one of the key transitional periods of the 20th century. Periods to be examined include tsarist rule, two revolutions, and culture. (F) RAM

132. Dostoevsky, Tolstoy, and the English Novel. (4) Three hours of lecture per week. A reading of novels by Dostoevsky and Tolstoy along with some relevant English novels. We will look at how the Russian and English novels respond to each other, resemble each other, and differ from each other, especially in their treatment of childhood, family, love, social theory, spirituality, and narrative. (F,SP) Staff

133. The Novel in Russia and the West. (4) Course may be repeated for credit with consent of instructor. Three hours of lecture per week. Study of major Russian and Western (European and American) 19th- and 20th-century novels, and their interrelations. (F,SP) Staff

133R. Research in Russian Literature. (1) Individual consultation. Research project to be approved by the instructor. Prerequisites: Consent of instructor. Special research project to be coordinated with lecture course, Slavic 133. Formerly “The Foreign Contexts of Russian Literature,” now changed to “The Novel in Russia and the West”. Supervised by the instructor of the lecture course in which the student is also enrolled. Final research paper of 10-15 pages required. (F,SP) Staff

134. Gogol. (3) Three hours of lecture per week. Gogol’s complete fiction and plays. Staff

134C. Dostoevsky. (4) Three hours of lecture per week. A survey of the writer’s principal artistic works, treated in relation to his life and to developments in Russian and European literature. Extensive outside reading required for this course. (F,SP) Matich, Staff

134D. Tolstoy. (4) Three hours of lecture per week. A survey of the writer’s principal artistic works, treated in relation to his life and to developments in Russian and European literature. Extensive outside reading required for this course. Staff

134E. Chekhov. (4) Three hours of lecture per week. Studies in the innovative master of modern narrative forms: short story, drama, letter. Extensive exposure to the life and times of Anton Chekhov. Practice in critical approaches to literature and theater. Writing-intensive course. (F,SP) Staff

134F. Nabokov. (4) Three hours of lecture per week. A thorough examination of Nabokov’s fiction from his European and American periods, his (imagined) relation to literary predecessors, and his construction of an authorial self. Extensive outside reading required for this course. (F,SP) Staff

134N. Studies in Russian Literature. (3) Course may be repeated for credit with consent of instructor. Three hours of lecture per week. Variable subject matter; see Department announcement for description. Staff

134R. Research in Russian Literature. (1) Course may be repeated for credit. Individual consultation. Prerequisites: Consent of instructor. Special research project to be coordinated with lecture course, Slavic 134 series (Slavic 134A-B-C-D-E-F-N). Supervised by the instructor of the lecture course in which the student is also enrolled. Final research paper of 10-15 pages required. (F,SP) Staff

137. Introduction to Slavic Linguistics. (3) Students who have taken 220 may not receive credit for 137. Three hours of lecture per week. Prerequisites: Two years of a Slavic language or consent of instructor. An introduction to the Slavic languages, their structures and histories, and descriptive and theoretical principles for their analysis. The origin and ancient history of the Slavs. Staff

138. Topics in Russian and Soviet Film. (4) Course may be repeated for credit as topic varies. Three hours of lecture and two hours of screening per week. This course will examine the Russian contribution to film history and theory, with particular attention paid to the role of the cinema in Soviet culture and Russian films in the Cold War apex to literary and political movements. Variable topics. (F,SP) Nesbet

146. East/West Encounters: The Literatures of Orientalism. (4) Three hours of lecture per week. The course will explore the ways in which Asia or the Orient has been figured in the English, French, and Russian literary traditions from the 18th to the early 20th centuries. We will be interested in the different modes of exoticism, from the stereotypic to the relativistic, that
148. Topics in Russian Cultural History. (Course may be repeated for credit. Three hours of lecture/discussion per week. Prerequisites: 101A (which may be taken concurrently). Study and analysis of the development of the Russian literary language and short fiction from the 18th century to the present. (F,SP) Staff

181. Readings in Russian Literature. (Course) Three hours of lecture per week. Prerequisites: 101A or 101B (may be taken concurrently). Survey of the writer's principal artistic works, treated in relation to his life and to developments in Russian and European literature. (F,SP) Golburt, Staff

188. Russian Prose. (Course) May be repeated once for credit with consent of instructor. Three hours of lecture per week. Prerequisites: 103A (which may be taken concurrently). Survey of Russian prose, with emphasis on the development of the Russian literary language and short fiction from the 18th century to the present. (F,SP) Staff

190. Russian Culture Taught in Russian: Country, Identity, and Language. (Course) May be repeated once for credit as topic varies. Three hours of lecture per week. Prerequisites: 101A, 101B, or equivalent. Survey of Russian literature, history, and society from the 19th and 20th centuries—works of fiction, public address, personal documents—the course will trace the formation and evolution of Russian national identity. (F,SP) Staff

28A-28B. Introductory Bulgarian. (5,5) Five hours of lecture per week. Prerequisites: 28A is prerequisite for 28B; or consent of instructor. Sequence begins in the fall. Practical instruction in the Bulgarian language with a focus on integrative skills (reading, grammar, conversation). Course offered as staffing permits. (F,SP) Staff

Upper Division Courses

117A-117B. Advanced Bosnian/Croatian/Serbian. (2,2) Course may be repeated for credit as topic varies. Three hours of lecture per week. Prerequisites: 117A is prerequisite to 117B; 117A is prerequisite to 117B. Sequence begins fall semester. (F,SP) Alexander

120. Topics in Slavic Culture. (Course) May be repeated for credit with consent of instructor. Three hours of lecture per week. Prerequisites: 117A (may be taken concurrently). Studies in Slavic/Croatian literature, linguistics, or conversation, depending on the needs of the students enrolled. Alexander

General and Other Slavic

Lower Division Courses

RS6-85B. Writing and Reading about Russia. (4,4) Three hours of lecture per week. Prerequisites: UC Entry-Level Writing Requirement or equivalent for 5A; 5A or equivalent for 5B. Formerly 5A. Reading and composition course based on works of Russian writers, either in English or translated into English. As students develop strategies of writing and interpretation, they will become acquainted with a theme in Russian literature and its major contributors. The final half of the Reading and Composition requirement, and RSB satisfies the second half. (F,SP) Staff

24. Freshman Seminar. (Course) May be repeated for credit as topic varies. One hour of seminar per week. Sections 1-2 may be repeated as topics change. Freshman seminars are offered in all campus departments, and topics vary from department to department and from semester to semester. Enrollment limits are set by the faculty, but the suggested limit is 25. (F,SP) Staff
147B. Balkan Folklore. (3) Three hours of lecture per week. Folktales, epic songs, customs, and beliefs of the South Slavs and other Balkan peoples. (F,SP) Alexander

147R. Slavic Studies Research. (1) Individual consultation. Research project to be approved by the instructor. Prerequisites: Consent of instructor. Special research project to be coordinated with lecture course for Slavic 147. Supervised by the instructor of the lecture course in which the student is also enrolled. Final research paper of 10-15 pages required. (F,SP) Alexander

158. Topics in East European/Eurasian Cultural History. (4) Course may be repeated for credit. Three hours of lecture/discussion per week. This course examines various perspectives on different East European and Eurasian (Central Asia, the Caucasus, Siberia) cultures (history, society, languages, literature, art). Variable topics. Instruction and readings in English; students with knowledge of the languages of the area are encouraged to do some reading in the original language. (F,SP) Staff

H195. Honors Seminar. (4) Individual conferences. Prerequisites: Overall and major grade point average of 3.3. Study and research on a topic selected by the student in consultation with the faculty adviser, culminating in the writing of a thesis. See departmental description of the Honors Program. (F,SP) Staff

198. Supervised Group Study for Undergraduates. (1-4) Course may be repeated for credit. Variable. (Minimum 50 minutes per week and individual consultation.) Must be taken on a pass/no pass basis. Prerequisites: Students must have completed 60 units of undergraduate study and have a minimum GPA of 3.0. Supervised cooperative study of topics (in Slavic and East European languages and literatures) not covered by regularly scheduled courses. (F,SP) Staff

199. Supervised Independent Study and Research. (1-4) Course may be repeated for credit. Individual conferences. Must be taken on a pass/no pass basis. Prerequisites: Overall GPA of 3.0. (F,SP) Staff

Slavic

Graduate Courses

200. Graduate Colloquium. No credit. Must be taken on a satisfactory/unsatisfactory basis. Reports on current scholarly work by faculty and graduate students. (F,SP) Staff

201. Advanced Russian Proficiency Maintenance. (2-3) Course may be repeated for credit. Three hours of lecture per week. Prerequisites: Graduate standing; 103B or equivalent; consent of instructor. Advanced work in speaking, writing, and comprehension in order to develop and maintain superior proficiency. Discussions and readings will focus on current cultural and political trends and other topics pertaining to Slavic studies. Special attention to the details of contemporary literary theory concerning colloquial speech. Conducted in Russian. (F,SP) Staff

204. Russian Composition and Style. (3) Three hours of lecture per week. Prerequisites: 103B. Essay-writing, analysis of texts, oral and written reports, and translation. (F,SP) Staff

210. Old Church Slavic. (3) Three hours of lecture per week. Prerequisites: Reading knowledge of a modern Slavic language or consent of instructor. Introduction to Old Church Slavic, with special attention to inflexional morphology. Assigned translations and sight reading of selected texts. (SP) Staff

214. Medieval Orthodox Slavic Texts. (4) Three hours of lecture/discussion per week. Prerequisites: 210. Assigned translations and sight reading of selected Medieval Orthodox Slavic texts. (F,SP) Staff

220. Comparative Slavic Linguistics. (4) Three hours of lecture per week. Prerequisites: 210. Reconstruction of Common Slavic phonology and morphology in relation to Indo-European and modern Slavic languages. (F,SP) Staff

222. Descriptive Grammar of Slavic Languages. (4) Course may be repeated for credit. Three hours of lecture per week. Prerequisites: Knowledge of the language. Survey of morphology and syntax of a contemporary Slavic language (Czech, Polish, Russian, or Serbian/Croatian); see departmental announcement for topic. Recommended for prospective teachers. (SP) Staff

230. Historical Grammar of Slavic Languages. (4) Course may be repeated for credit. Three hours of lecture per week. Prerequisites: 210. Historical phonology, morphology, and syntax of a Slavic language (Czech, Polish, Russian, or Serbian/Croatian). Some coverage of dialectology. See Department announcement for topic. (F,SP) Staff

231. History of Slavic Literary Languages. (4) Course may be repeated for credit. Three hours of lecture per week. Prerequisites: Advanced knowledge of the modern language, 210, 214 and at least one advanced or graduate-level literature course. Analysis of language and style of a Slavic literary language (Czech, Polish, Russian, or Serbian/Croatian) from the beginnings to the present, with emphasis on periods of particular significance. See Department announcement for topic. (F,SP) Staff

234. South Slavic Linguistics. (4) Three hours of lecture per week. Prerequisites: 220. Linguistic history and dialectology of Slovenian, Bulgarian, Macedonian, and Serbian/Croatian. (F,SP) Alexander

239. Twentieth-Century Slavic Literary Theory. (4) Three hours of lecture/discussion per week. Prerequisites: 281, 282, 221, one of following: 245, 246, 287; approval of instructor. Attempts to describe literary forms, poetic usage of language, and cultural infrastructure, as a code, examined as a consistent trend in 20th-century literary thought. This course is intended to situating this scholarly trend in historical perspective: its sources, evolution, and eventual dissipation. (SP) Staff

242. Eighteenth-Century Russian Literature. (4) Three hours of lecture per week. Studies in poetry, drama, and fiction, covering major figures between 1730 and the end of the century. (F,SP) Staff

243. The Russian Novel and Literatures of Western Europe. (4) Three hours of lecture per week. The development of the 19th-century Russian novel and its sources in and links with Western literary works and movements. (F,SP) Staff

245A. Russian Sentimentalism and Romanticism (1790s-1840s). (4) Three hours of lecture per week. Prerequisites: Graduate standing; consent of instructor; adequate knowledge of Russian. Coverage of major movements and genres in the intellectual context of the times. Readings in Russian. (SP) Staff

245B. Russian Realism (1840s-1900). (4) Three hours of lecture per week. Prerequisites: Graduate standing or consent of instructor; adequate knowledge of Russian. Coverage of major movements and genres in the intellectual context of the times. Readings in Russian. (F,SP) Staff

246A. Russian Modernism (1890s-1920s). (4) Three hours of lecture per week. Prerequisites: Graduate standing or consent of instructor; adequate knowledge of Russian. Coverage of major movements and genres in the intellectual context of the times. Readings in Russian. (SP) Staff

246B. Contemporary Russian Literature (1920-present). (4) Three hours of lecture per week. Prerequisites: Graduate standing or consent of instructor; adequate knowledge of Russian. Coverage of major movements and genres in the intellectual context of the times. Readings in Russian. (F,SP) Staff

255. Slavic Oral Epic. (4) Three hours of lecture per week. Prerequisites: 103B or 117B, or consent of instructor. Major movements and genres of Serbian/ Croatian or Russian. A comparison of Russian and South Slavic oral epic. Stylistic and poetic analysis of Serbian/Croatian and Russian texts with special attention to Parry-Lord oral formulaic theory. (SP) Alexander

280. Studies in Slavic Literature and Linguistics. (4) Course may be repeated for credit. Three hours of seminar per week. Prerequisites: Graduate standing; consent of instructor. Advanced studies in the several fields of Slavic literatures and linguistics. Content varies. (F,SP) Staff

282. Proseminar: Aims and Methods of Literary Scholarship. (4) Three hours of seminar per week. Course designed for new graduate students in literature. Introduction to modern literary theory and criticism; principles of textual analysis; methods of bibliographical research. (F,SP) Staff

287. Russian Poetry. (4) Course may be repeated for credit with consent of instructor. Three hours of lecture per week. Prerequisites: Open to qualified undergraduates. Class conducted in Russian. Russian poetry and versification (18th, 19th and 20th centuries); close readings of texts. Variable topics. (F,SP) Staff

289. Special Study for Graduate Students. (2-8) Course may be repeated for credit. Individual conferences. Must be repeated for credit each semester of employment as a teaching assistant. Prerequisites: Open to qualified graduate students. Must be taken on a satisfactory/unsatisfactory basis. Normally reserved for students directly engaged upon the doctoral dissertation. (F,SP) Staff

601. Individual Study for Master’s Students. (2-8) Course may be repeated for a maximum of 16 units. May not be used to satisfy unit or residence requirements for a master’s degree. Individual conferences. Must be taken on a satisfactory/unsatisfactory basis. Individual study for the comprehensive or language requirements in consultation with a field adviser. (F,SP) Staff

602. Individual Study for Doctoral Students. (2-8) Course may be repeated for a maximum of 16 units. Course does not satisfy unit or residence requirements for doctoral degree. Individual conferences. Must be taken on a satisfactory/unsatisfactory basis. Individual study in consultation with a major field adviser, intended to provide an opportunity for qualified students to prepare themselves for the various examinations required of candidates for the Ph.D. (F,SP) Staff

Professional Courses

301. Slavic Teaching Methods. (3) Course to be repeated for credit each semester of employment as graduate student instructor. Group and individual conferences. Must be taken on a satisfactory/unsatisfactory basis. Course on practical teaching methods, grading, syllabus preparation, lecture and assignment planning, and related matters. Students may prepare a representative portion of the work for such a course (e.g., lecture outline and assignments for a course segment) and may participate in presentation of the material and in evaluation of samples of student work. (F,SP) Staff
Social Welfare
(School of Social Welfare)
School of Social Welfare Office: 120 Haviland Hall, (510) 642-2892
socialwelfare.berkeley.edu
Acting Dean: Lorraine Midanik, Ph.D.
Associate Dean: Jill Duerr Bertik, Ph.D.
Director of Field Work: Bart Grossman, Ph.D.
Coordinator of Academic Programs: Amy LePan, Ph.D.
Assistant Deans: Thomas G. Steele
Director of Admissions: Rafael Herrera, M.S.W., L.C.S.W., D.C.S.W.

Professors
Michael J. Austin, Ph.D. University of Pittsburgh. Management and planning, community organization
Jill Duerr Bertik, Ph.D. University of California, Berkeley. Welfare and child policy
Eileen D. Gamm, Ph.D. University of Michigan. Child welfare, mental health
Neil Gilbert, Ph.D. University of Pittsburgh. Social policy and planning
Mary Ann Mason, J.D. University of San Francisco, Ph.D. University of Rochester. Law and social policy
Lorraine T. Midanik, Ph.D. Johns Hopkins University. Health development
James Midgley, Ph.D. University of Cape Town. Social policy, international social work
William McKinley Runyan, Ph.D. Harvard University. Adult development
Andrew E. Scharfach, Ph.D. Stanford University. Gerontology
Steven P. Segal, Ph.D. University of Wisconsin. Mental health
Lonnie R. Snowden Jr., Ph.D. Wayne State University. Social supports
Yu-Wen Ying, Ph.D. University of California, Berkeley. Minority mental health, with focus on Asian Americans
Jewellie Taylor (Emeritus)
Ralph M. Kramer, D.S.W. (Emeritus)
James R. L. Leidy, Ph.D. (Emeritus)
Henry Miller, D.S.W. (Emeritus)
Leonard S. Samuels, D.S.W. (Emeritus)
Robert Pruger, D.S.W. (Emeritus)
Kerrit T. Wilkie, D.S.W. (Emeritus)

Associate Professors
Julian Chun-Ching Chow, Ph.D. Case Western Reserve University. Community practice, service delivery, urban policy
Kurt C. Organista, Ph.D. Arizona State University. Latino/minority psychosocial adaptation, psychopathology

Assistant Professors
Julia Hastings, Ph.D. University of California, Los Angeles. Mental health, health, poverty, and welfare reform
Susan Stone, Ph.D. University of Chicago. Family and school influences on child and adolescent school performance

Adjunct Professor
Bart Grossman, Ph.D. University of Michigan, Ann Arbor. Field education

Lecturers
Rafael Herrera, M.S.W., L.C.S.W., D.C.S.W. University of California, Berkeley
Amy LePan, Ph.D. University of California, Los Angeles

Field Work Consultants/Lecturers
Robert Ayasse, Ph.D. University of California, Berkeley
Barb Correll, M.S.W., M.P.H. University of California, Berkeley
Valerie Edwards, M.S.W. University of California, Berkeley
Peter Manoleas, M.S.W. University of Michigan, Ann Arbor
Gregory Merrick, M.S.W. University of California, Berkeley
Caroline Ralph, M.S.W. University of California, Berkeley
Barrie K. Robinson, M.S.S.W. Kent State University
Paul Terrell, D.S.W. University of California, Berkeley. Social policy

Lecturers
Claudia Albano, M.A. Harvard University
Mary Coombs, Ph.D. Rutgers University
Tom Courtney, M.P.A. University of San Francisco
Elizabeth Dunn, J.D. Golden Gate University
Mary Duryea, Ph.D. San Francisco State University
Barbara Ivins, Ph.D. University of California, Berkeley
John Linder, M.S.W. California State University, Sacramento
Juliet Rothman, Ph.D. University of Southern California

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Social Welfare

Undergraduate Programs
College of Letters and Science

Under the jurisdiction of the College of Letters and Science, the School of Social Welfare administers the Undergraduate Group Major in Social Welfare leading to the B.A. degree. This liberal arts major, with a focus on the social sciences and core social welfare courses, introduces students to problems, policies, and methods in the social welfare field and allows students to test their career interest in social welfare work before employment or graduate professional education. It also serves as a flexible preprofessional major for various other fields.

The social welfare major admits up to 130 new students each year. Students should take the major as soon as they have completed the required prerequisites. Students should begin the sequence of four required social welfare courses with 110, continuing thereafter with 112, 114, and 116.

Undergraduate Major Requirements

Lower Division Prerequisites. Required: Introduction to Psychology, Introduction to Sociology, Introduction to Statistics, completion of the Letters and Science Reading and Composition requirement. Recommended but not required for the major: Introduction to Anthropology, Introduction to Economics, or Introduction to Political Science.

Upper Division. A minimum of 29 upper division units taken for letter grade. In addition, Social Welfare 110, 112, 114, and 116; and a minimum of five approved social science electives. For a list of approved electives and further information on the major, contact the Social Welfare Undergraduate Office, 219 Haviland Hall, (510) 642-4407.

Honors Program. The honors program in social welfare provides an opportunity for qualified undergraduates to investigate thoroughly an area of interest, to work closely with a faculty member, and to produce a paper or project. Students who meet the eligibility requirements (a 3.3 grade-point average overall and in the major, and completion of Social Welfare 110 and 112) may enroll in H195 (1 unit) (Emeritus) is a two-hour biweekly seminar addressing topic identification, library research, and the preparation of an annotated bibliography and essay prospectus. The spring H195 (3 units) is an individual tutorial in which students prepare the honors essay under the supervision of their faculty essay advisors.

Graduate Programs

The School of Social Welfare is a graduate professional school dedicated to educating social workers and social welfare scholars for a range of leadership, research, teaching, and advanced practice roles in the profession. Our educational emphasis is on preparing students for professional responsibilities in the field of social welfare and the institutional systems that comprise it, particularly public social services and publicly supported voluntary social services.

While students are prepared to practice at specific intervention levels and with specialized skills, all will be thoroughly grounded in a knowledge of social and psychological issues, social welfare policies, and social service organizations. Master’s-level professional education for Berkeley is characterized by a spirit of critical inquiry and an emphasis on the use of tested knowledge and theory in developing and applying intervention methods. Classroom preparation focuses on an understanding of individual and family development, ethnocultural factors, policies and institutional systems governing services, and research strategies for program development and evaluation.

One aspect of Berkeley’s mission is to educate students from groups that historically have been underrepresented in university education because of age, socioeconomic background, disability, geography, or discrimination. Students and faculty are committed to addressing demographic changes in the state of California and the nation in order to advance the values and goals of the social work profession. These include recognizing the worth, uniqueness, and dignity of all individuals, strengthening the family and other systems of support, respecting cultural diversity, and promoting opportunity and social and economic justice for all.

Graduate Programs
The school offers the following programs:
A two-year program of study for the Master of So-
cial Welfare (M.S.W.) degree prepares students for
advanced practice in social work. Classroom and
field courses are designed to teach profes-
sionals to use tested knowledge and skill and re-
search methods in their practice. Applicants for ad-
mission must have strong academic preparation in
the liberal arts and sciences, including coursework in
the social sciences. In addition, an introductory course-
work in social welfare and social
work, research methods, and quantitative rea-
soning is given special attention. Knowledge of the
social welfare professions and professional commit-
tment to social work are also evaluated. Such knowledge
and commitment are usually demonstrated in part
by successful paid employment related to social
welfare. However, it is not a re-

amination: socialwelfare.berkeley.edu. Admission to
the school is contingent on admission to graduate
standing; for more information, see www.grad.
berkeley.edu/admissions/index.shtml.

Applications, Applications for admission to any
of these programs should be submitted as early as
possible beginning in October and no later than
February 1 for the Ph.D. and M.S.W./Ph.D. and
January 5 for the M.S.W. and M.S.W./Ph.D. for
admission in the following academic year. Please see
the school’s web site for more infor-
mation: socialwelfare.berkeley.edu. Admission to
the school is contingent on admission to graduate
standing; for more information, see www.grad.
berkeley.edu/admissions/index.shtml.

For further information, consult our web site at
socialwelfare.berkeley.edu or contact the School’s
admissions office.

Lower Division Courses
24. Freshman Seminar. (Course may be repeated
for credit. One hour of seminar per week. The hour of seminar per week.
Sections 1-2 to be graded on a letter-grade ba-
sis. Sections 3-4 to be graded on a passed/not passed basis. The Freshman Seminar Program has been de-
signated to give students an introduction to the dis-

C129. Children Through History: Social Practices
and Social Welfare. (Course may be repeated
for credit. Individual consultation. Prerequi-
sites: 100. Preparation of an honors thesis. (F.SP) Staff

197. Field Studies in Social Welfare. (1-3) Field work in
community agencies and individual conferences with
faculty. Must be taken on a passed/not passed basis.
Supervised experience relevant to specific aspects of
social welfare in off-campus non-profit and govern-
mental organizations. (F.SP) Staff

198. Group Study for Advanced Undergraduates. (1-3)
Course may be repeated for credit. Lecture and
discussion. Must be taken on a passed/not passed ba-
sis. Group study on selected social welfare topics. (F.SP) Staff

199. Supervised Independent Study and Research. (1-3)
Course may be repeated for credit. Tutorial con-
ference. Must be taken on a passed/not passed basis.
Enrollment is restricted by regulations specified in the
General Catalog. (F.SP) Staff

Graduate Courses
(2) Two hours of lecture per week. The psychological,
interpersonal, and social development of the person
across the lifetime cycle in the context of different social en-
vironments. (F) Runyan, Stone

205. Psychosocial Problems and Psychopathol-
gy. (2) Two hours of lecture per week. Development-
mental abnormalities and deviations which result in
dysfunctional behavior in the elderly. Focus on
defining problems and disorders of children and adults from
psychological and social perspectives. (F) Gambiri,
Organista

210A. Stress and Coping in Adulthood. (2) Two
hours of lecture per week. Prerequisites: 200. De-
velopmental stress, coping, and adaptation. Focus on
the psychological and coping in the adult
(25-60) years. Organista

210B. Infant Development. (2) Two hours of lecture
per week. Prerequisites: 200. Topics and issues in
infant development, including infant mental health,
career development, relationships, and intervention.
Principles of infant and toddler development. (F) Ivens
210C. Aging Processes. (2) Two hours of lecture per week. Sociological, psychological, physiological, and cultural factors relevant to understanding the complex interplay of aging processes. Normative and maladaptive aspects of the aging process are examined in terms of their implications for personal and societal adaptation. Scharlach

210D. Life Histories and Case Studies. (2) Two hours of lecture per week. Prerequisites: 200. Theoretical and methodological problems in the examination of individual lives. Focus on the intellectual and social processes involved in the formulation, critical examination, and reformulation of clinical case studies and psychobiographies. Runyan

210F. Social Networks and Social Support. (2) Two hours of lecture per week. Prerequisites: 200. F Focus on the “personal community”—those significant others available to render assistance in times of physical or emotional strain. How networks operate; their accomplishments and limitations; the role and skills of professionals in assessing and utilizing networks for clients. Snowden

C210H. Perspectives in Personality: Personality Theory. (2) Two hours of seminar per week. Major approaches to personality theory, including psychodynamic, humanistic, behavioral, and humanistic theory, as well as work in culture and personality, the study of lives, and feminist psychology. Analysis of relations between the life, work, and social-historical context of Freud and the Psychoanalytic School of thought, and others, with attention to the origins, course, and (on occasion) fail of each tradition. Also listed as Psychology C250E.

220. Introduction to Social Welfare Policy. (2) Two hours of lecture per week. Analysis of issues in social welfare policy and recent trends shaping the development of the American welfare state. (F) Gilbert

221. Mental Health and Social Policy. (2) Two hours of lecture per week. Mental health policies and programs at the national, state, and local levels; major factors influencing the provision of mental health services; reciprocal relationships between mental health policy and social work practice. (SP) Segal

222. Advanced Seminar in Community Mental Health. (2) Two hours of seminar per week. Prerequisites: 220. Examines critical policy and practice issues within the mental health field. (F) Segal

226. Social Policy and Gerontology. (2) Two hours of lecture per week. U.S. social policy and programs for the aging are analyzed with respect to the knowledge required to assess the needs for societal supports and major issues and trends in the delivery of social services. (SP) Robinson

230. Social Policy: Children and Families. (2) Two hours of lecture per week. Introduction to current problems, programs, and policies in child, youth, and family welfare. (SP) Berrick

232. Social Work and Education Policy. (2) Two hours of lecture/discussion per week. This course examines the interaction between social work practice and the educational system. It focuses on the school as a social system and the current policy context of education. It presents current topics in educational policy and critically analyzes them from a social work perspective. The skills placed on the potential roles played not only by school social workers, but the social work profession in general, in actively collaborating with educational systems to support optimal development pathways for children and adolescents. (F) Stone

233. Social Work, Social Change, and Social Justice. (2) Two hours of lecture/discussion per week. The purpose of this course is to meet the needs of students interested in the way social work incorporates a social change and social justice perspective. The course is grounded in theoretical perspectives on social change and social justice, as well as in the practical skills and professional matters such as change-focused direct practice, community organizing, legislative action, and other activities designed to give expression to the professor’s social justice commitments. (F.SP) Midgley

234A. Law and Social Welfare: Children and Families. (2) Two hours of lecture per week. Legal information and policy discussion for social workers and other human service providers in the child and family welfare field. Staff

234B. Law and Social Welfare: Health and Mental Health. (2) Two hours of lecture/discussion per week. Course focuses on legal and ethical issues related to aging and long-term care, and issues covered include end-of-life decisions making; health care rationing; paternality and self-determination; competency determination; mandated family responsibility; age versus a criterion for service eligibility. Staff

235. Homelessness in America. (2) Two hours of lecture/discussion per week. This course addresses homelessness in the context of social responsibility for the poor. It considers the legal, social, and economic context of homelessness; examines the diversity of the homeless, their special needs, handicaps, and behaviors; and introduces health and medical perspectives on care and treatment. The course looks at homelessness as a full-time job of survival and explores the prospects of the homeless for changing their condition. (F) Segal

236. International Social Welfare. (2) Two hours of seminar/discussion per week. This seminar explores key international social welfare issues from the perspective of the globalization of social, economic, and political activities. Although its primary focus is on social policies and social services, attention will also be given to the role of professional social work in the international context. While emphasizing theoretical and analytical issues, practical and professional matters with particular reference to social work and social development will also be discussed. Students will have the opportunity to acquire knowledge of international social welfare activities as well as the analytical skills to address and debate complex international issues. (F.SP) Midgley

237. The Benevolent Asylum. (2) Two hours of lecture/discussion per week. Supervised residential care provision, for a variety of reasons, has been much maligned during the last 50 years. Yet for many, residential placement has served as a source of stability, mental health, and quality care. This course will consider the history of residential care provision and development, financing and design issues, including group responses to the environment, and an examination of the environment such as size, architecture, community access, supervision, etc. Using an evidence-based approach to residential care, the course will consider setting objectives, special population needs, and program fit. This course will look at the pros and cons of group, institutional or residential placement from a value-based and from an empirical perspective. It will involve substantial use of international materials. The course will consider the theory and practice of residential care for a broad range of populations. It will provide the essentials necessary to enable students to develop and design benevolent asylums. (F.SP) Segal

238B. Drug and Alcohol Policy. (2) Two hours of lecture per week. Examines how substance abuse policy is formulated by examining political, historical, epidemiological and clinical factors. Emphasis on how alcohol and drug problems become defined as social problems and the relationship of problematic substance use to other social problems. Emphasis on alcohol abuse and on individual and social control models of substance abuse. In addition, the development and evaluation of alcohol and drug abuse treatment will be discussed. Midanik

238C. Health Policy—A Social Welfare Perspective. (2) Two hours of lecture per week. Reviews major issues and programs in the health care field. Course considers the social, economic roles of the public, voluntary, and private sectors; and the implications of political and programs for society and the individual client. (SP) Midanik

240. Introduction to the Field of Social Welfare and the Profession of Social Work. (2) Two hours of lecture per week. Course considers history, development, and mission of the field and profession, fundamental social work tasks, and the organizational contexts of practice. (F) Grossman

241. Foundations of Social Work Practice. (3) Three hours of seminar/discussion per week. This course is designed to introduce generalist skills and knowledge for social work practice with individuals, families, groups, organizations, and communities, within a framework of social work’s core values and fundamental practice responsibilities. These core values include understanding social justice and client empowerment. A generalist approach to understanding fundamental practice responsibilities includes cultural responsiveness, commitment to professional competence, and demonstration of practice effectiveness. (F)

243. Direct Practice in Child and Family Settings. (2) Two hours of lecture/discussion per week. Prerequisites: 241. Planning, implementing, and evaluating services for clients with major mental disorders or at risk of developing mental illness. Review of intervention models addressing the needs of clients for basic resources, social rehabilitation, and clinical treatment. (SP) Manoles

244. Direct Practice in Mental Health Settings. (2) Two hours of lecture/discussion per week. Prerequisites: 241. Planning, implementing, and evaluating services for clients with major mental disorders or at risk of developing mental illness. Review of intervention models addressing the behavioral, emotional, and situational problems of children and families in child welfare, mental health, medical, school, and community settings. (SP) Ayasse, Gambrell

246. Direct Practice in Aging Settings. (2) Two hours of lecture/discussion per week. Prerequisites: 241. Clinical case management with older adults. Comprehensive multidisciplinary assessment, advocacy and empowerment, and the range of direct intervention models addressing the physical, cognitive, and psychosocial concerns of older adults and their families. (SP) Scharlach

250A. Social Work with Groups. (2) Two hours of lecture per week. Prerequisites: 241. Theoretical frameworks and intervention skills for family work. Combs

250C. Family Therapy. (2) Two hours of lecture per week. Prerequisites: 241. Theory and practice regarding the formation, sustenance, and termination of groups. Emphasis on the role of the social worker in facilitating inter-personal processes in groups. Grossman

250F. Family Therapy. (2) Two hours of lecture per week. Prerequisites: 241. Theoretical frameworks and intervention skills for family work. Combs

250C. Brief Therapy and Crisis Intervention. (2) Two hours of lecture per week. Prerequisites: 241. Examines the clinical application of crisis intervention and brief psychotherapy from an historic and psychodynamic perspective. Provides assessment criteria for assignment to these forms of treatment and techniques for intervention. (SP) Herrera

250G. Psychodynamically Oriented Social Work Practice with Adults. (2) Two hours of lecture/discussion per week. Prerequisites: 241. Course examines clinical skills and concepts from a psychodynamic perspective. Key concepts and processes, such as the formation of a therapeutic alliance, resistance, transference, counter-transference, and the
205. Child Psychopathology; Issues in Assessment and Treatment. (2) Two hours of seminar per week. Prerequisites: 241. Second part of two-semester course designed for students preparing for careers in public child welfare. Fall term addresses continuum of services, common clinical case management themes, impact of chemical dependency and domestic violence, decision making and intervention strategies, and the practice of social work within the legal context of the dependency court. (F) Gilson

205NB. Child Psychopathology; Child Welfare Services. (1) Two hours of lecture/seminar per week. Prerequisites: 241, 250NA. First part of two-semester course designed for students preparing for careers in public child welfare. (F) Gilson

250. Strengthening Intergenerational/Intercultural Ties in Immigrant Families. (2) Two hours of lecture/discussion per week. Prerequisites: 241. The United States is a nation of immigrants. Today, one of every nine Americans and one of every four Californians is an immigrant. Social workers need to acquire skills to serve this growing population. One significant problem that faces immigrant families is the development of intergenerational/intercultural conflict that occurs as a result of the differential acculturation between parents and their children. Their occurence has been documented in virtually every group of immigrants and refugees, and research has demonstrated that this conflict results in poor mental health for both parents and children. Strengthening Intergenerational/Intercultural Ties in Immigrant Families (STIF) is one of the very few empirically demonstrated interventions that exist to ameliorate this problem. This 10-week, 24-hour intervention is intended for use with immigrants from any ethnic background and may be administered in either a group or individual format. The course trains students to use STIF effectively in their work with immigrant families. (F,SP) Ying

250T. Social Work Practice in School Settings. (2) Two hours of lecture/seminar per week. Prerequisites: 241. This course 1) provides students with an understanding of how current educational policies and practices impact the day-to-day lives of academically and socially vulnerable students; 2) builds student skills in identifying and selecting the multiple points of intervention relevant to students in schools, including individual intervention with children, family intervention, building links between families and school staff, advocacy, classroom-based intervention, and collaboration with teachers; and 3) presents assessment and intervention strategies guided by an ecosystemic and resilience perspective which focus on student and family strengths and suggests multiple intervention options. (SP) Ayasse

250U. Substance Abuse Treatment. (2) Two hours of lecture per week. This course provides an overview of various theories and methodologies currently used in the diagnosis and treatment of substance abuse disorders. Though the bulk of the course will be devoted to the disease model and corresponding interventions, some attention will be given to prevention and epidemiology. Placement will be based on the unique practice role of social work in the prevention/intervention of substance abuse problems. (SP) Gilbert

251. Community Practice. (2) Two hours of seminar per week. This course provides an overview of the theories, knowledge, and skills required for community organization, needs assessment, and program planning and development. Course focuses on developing community-based interventions in a diverse society. (SP) Chow

252. Management Practice. (2) Two hours of lecture per week. Basic theories, areas of knowledge, and practice skills for the administration of human services. Topics include program development implementation, interorganizational collaboration, and staff supervision. (F) Austin

254. Policy Practice. (2) Two hours of seminar per week. Course introduces the practice of social welfare policy making. Focusing on the California State Legislature, students in the first half of the course are taught policy analysis skills, lobbying, testifying, working with legislators, legislative staff, and the media, and forwarding a policy agenda. In the second half of the course, students examine the internal environment of agency change, address the use of management information systems and outcomes measurement as strategies for information collection, and learn skills for effectively using information to improve agency decision making. (F) Berrick

255. Community Organizing. (2) Two hours of lecture/discussion per week. Prerequisites: Policy Practice. Students will learn the techniques and tools for effective program delivery. Students will participate in a lecture/discussion/hands-on computer laboratory format. (SP) Stone

257. Financial Management. (2) Two hours of lecture per week. Formerly 298. This course provides both theoretical knowledge and practical skills for managing scarce resources in social service organizations. Students will learn financial management techniques and will apply them to an agency or program setting. (SP) Snowdon

261. Comparative Method. (2) Three hours of lecture/seminar per week. This course provides an overview of various theories and methodologies currently used in the diagnosis and treatment of substance abuse disorders. Though the bulk of the course will be devoted to the disease model and corresponding interventions, some attention will be given to prevention and epidemiology. Placement will be based on the unique practice role of social work in the prevention/intervention of substance abuse problems. (SP) Gilbert

266. Research Methods and Techniques in Social Welfare. (2) Two hours of lecture per week. The logic of social research: topics include rationale and procedure of research design, validity, reliability, and an introduction to sampling techniques. (SP) Staff

269. Introduction to Research. (3) Four hours of lecture/discussion per week. Prerequisites: Public Health 142 and 145. Course addresses the strengths and weaknesses inherent in linear regression analysis. Data collection, questions, detection, and treatment are explored in a lecture/discussion/hands-on computer laboratory format. (SP) Staff

270. Access to Human Services Among Low Income and Minority Populations. (2) Two hours of seminar per week. Course examines how services can be made effective and appropriate for minority and low-income: children and the poor. Problems of utilization will be considered with respect to: cultural beliefs and expectations; self-help and indigenous care; and the design of service systems. Focus on health care, mental health, and services for children and families. (SP) Snowden

274. Immigrants and Refugees in the U.S. (2) Two hours of seminar per week. Overview of immigration policy in the U.S. from an international and historical perspective. Theories of migration, transnationalism, and adaptation will be addressed, along with skills required for working with refugees and immigrants facing difficulties. The addresses the impact of policy on those who come to the U.S. and the children of newcomers and their families face once here. (SP) Staff

275. Diversity-Sensitive and Competent Social Work. (2) Two hours of lecture/discussion per week. Course prepares students to understand, provide, and evaluate diversity-sensitive social work services. The course builds sensitivity to diversity by addressing multiple status dimensions (race, ethnicity, gender, sexual orientation, social class, etc.), involves students in the process of diversely sensitization methodological, self-reflection and interactive exercises, and promotes diversity competent practice skills. (SP) Staff

279. Seminar in the History and Philosophy of Social Welfare. (2) Two hours of seminar per week. Primarily for doctoral students. A review of efforts to construct the field of social welfare and to analyze its tendencies. (SP) Gilbert

280. Introduction to Social Welfare Research. (2) One hour of lecture and one hour of discussion per week. Introduction to the theory and practice of research in social welfare. (SP) Staff

282A-282B. Seminar in Social Welfare Research. (2,2) Two hours of seminar per week. Prerequisites: 280. Problem formulation, design, and implementation. (F,SP) Staff

287. Research Resources and Processes. (2) Two hours of seminar per week. Must be taken on a satisfactory/unsatisfactory basis. Students will be introduced to the tasks and tools of the research process in social welfare, including reference works, bibliographic aids, and computer databases. Individual faculty members will present their research, emphasizing design methodology, outcomes, and contributions to social welfare. (F,SP) Staff

289A. Research Methods and Techniques in Social Welfare. (2) Two hours of lecture per week. The logic of social research: topics include rationale and procedure of research design, validity, reliability, and an introduction to sampling techniques. (SP) Staff

289C. Introduction to Regression. (3) Four hours of lecture/discussion per week. Prerequisites: Public Health 142 and 145. Course addresses the strengths and weaknesses inherent in linear regression analysis. Data collection, questions, detection, and treatment are explored in a lecture/discussion/hands-on computer laboratory format. (SP) Staff

295. Dissertation Seminar. (2) Two hours of seminar per week. The purpose of this seminar is 1) to develop research skills by integrating issues of research design with measurement, data analysis, and report writing, and 2) to prepare students for their dissertation research by directly addressing issues related to the development of a dissertation prospectus. (SP) Staff

296. Individual Study for Graduate Students. (1-12) Course may be repeated for credit. One unit will be awarded for each four hours per week of student work. Prerequisites: Consent of instructor. Designed to permit qualified graduate students to pursue special study in a subject area of their choosing under the direction of a faculty member. (F,SP) Staff

298. Group Study for Graduate Students. (1-12) Course may be repeated for credit. One unit will be awarded for each four hours per week of student work. Seminar discussion. Prerequisites: Consent of instructor. Intensive examination of selected social welfare topics. (F,SP) Staff

299. Individual Research for Graduate Students. (1-12) Course may be repeated for credit. One unit will be awarded for each four hours per week of student work. Prerequisites: Consent of instructor. Designed to per-
mit qualified graduate students to pursue research in a subject area of their choosing under the direction of a faculty member. (F) Staff

999. Departmental Colloquium. Two hours of colloquium per week. (F,SP) Professional Courses

300. Teaching in Social Welfare. (2) Two hours of seminar per week. Must be taken on a satisfactory/unsatisfactory basis. This seminar aims to prepare doctoral students for teaching in social welfare. The course is divided into two parts. The first part examines education from the perspective of the student and the teacher, and their interface. It reviews philosophies and theories of adult education, and underscores the importance of critical reflection, both on the part of the teacher and the student. The second part of the course is focused on the practice of teaching in social welfare, and addresses specific skills, such as syllabus design, instructional methods, coverage of diversity content, student assignment and evaluation, use of technology, advising, mentoring, and working with GSIs and students with special needs. Finally, students start developing the beginnings of a teaching portfolio. Using an interactive format, students are encouraged to share their own learning and teaching experiences, and progress in their development as teachers. (SP) Ying

301. Training in Teaching. (1-6) Course may be repeated for credit. Supervised teaching assistance. Must be taken on a satisfactory/unsatisfactory basis. One unit will be awarded for each four hours per week of student work. (F,SP) Staff

400. Introductory Practicum. (1) Two hours of seminar per week. Must be taken on a satisfactory/unsatisfactory basis. Introduction to the range of professional roles and services in social welfare through university-based seminars, agency visits, and professional panels. Taken in the first semester of the MSW program. (F) Staff

401. Field Practicum. (1-10) Course may be repeated for credit. One unit of credit awarded for each four hours per week of practicum work. Must be taken on a satisfactory/unsatisfactory basis. Supervised field work in social agencies and university-based group meetings. (F,SP) Staff

403. Training in Research. (1-6) Course may be repeated for credit. Supervised research assistance. Must be taken on a satisfactory/unsatisfactory basis. One unit will be awarded for each four hours per week of student work. (F,SP) Staff

Sociology
(2011-2012)

Department Office: 410 Barrows Hall, (610) 642-4766
sociology.berkeley.edu

Chair: Michael Burawoy, Ph.D.

Professor Emeritus
Neil J. Smelser, Ph.D. Harvard University. Theory, economics, social change

Professors
Victoria E. Bonnell, Ph.D. Harvard University. Historical, labor, Russian sociologies
Michael Burawoy, Ph.D. University of Chicago. Labor, comparative, political economy
Peter Evans, Ph.D. Harvard University. Comparative development, Latin America, state and industrialization
Claude S. Fischer, Ph.D. Harvard University. Urban networks, history, technology
Norman Girvan, Ph.D. University of Wisconsin. Social stratification and class, methodology and statistics, complex organizations
Leo A. Goodman (The Class of 1938 Professor), Ph.D., D.S.C. (Hon.) Princeton University. Statistical methodology and sampling
Heather A. Haveman, Ph.D. University of California, Berkeley. Organizational theory, economic sociology, political sociology
Michael Hout, Ph.D. Indiana University. Demography, sociology of death and burial
Jerome Karabel, Ph.D. Harvard University. Education, social movements, political economy
John Lie, Ph.D. Harvard University. Social theory, political sociology
Kristin Luker, Ph.D. Yale University. Gender, population, medicine

Trond K. Petersen, Ph.D. University of Wisconsin. Career systems, payment systems, organizational behavior
Marin Sanchez-Jankowski, Ph.D. Lasker-Uchisakatsushi Institute of Technology, Deviance, political, urban, youth
Annie Swidler, Ph.D. University of California, Berkeley. Culture, religion, theory, organizations
Bame Thorne, Ph.D. Brandeis University. Gender, theory, childhood
Kim Voss, Ph.D. Stanford University. Labor, movements, historical, medical
Loic Wacquant, Ph.D. University of Chicago. Racial domination, comparative urban marginality, incarceration, social theory
Margaret Ween, Ph.D. University of Chicago. Political sociology
Robert N. Belath (Elliott Chair Emeritus), Ph.D. Harvard University. Theoretical sociology
Robert Blauem (Emeritus), Ph.D. University of California, Berkeley. Race and ethnicity, kinship
Kenneth E. Bock (Emeritus), Ph.D. University of California, Berkeley. Theory, methodology
Manuel Castells (Emeritus), LL.B., Ph.D. University of Paris. Urban sociology
Nancy J. Chomsky (Emerita), Ph.D. Brandeis University. Feminist theory, family, psychoanalysis
Robert E. Colman (Emeritus), Ph.D. University of Illinois. Organizations, work, Japanese society, quality
Trophie M. Coontz (Emeritus), Ph.D. Northwestern University. Deviance, social movements, law
Charles Y. Glock (Emeritus), Ph.D. Columbia University. Survey, attitudes, public opinion
Arle R. Hochschild (Emeritus), Ph.D. University of California, America
David Matza (Emeritus), Ph.D. Princeton University. Deviance, social change, poverty
Richard J. Ofshe (Emeritus), Ph.D. Stanford University. Thought reform, social psychology
H. Franz Schermerhorn (Emeritus), Ph.D. Columbia University. Organizations, cities, China, America
Philip Selznick (Emeritus), Ph.D., Dr. Jur., h.c. Columbia University. Theory, law, organizations/institutions

Associate Professors
Laura Enquimez, Ph.D. University of California at Santa Cruz. Latin American social policy
Thomas Gold, Ph.D. Harvard University. Modernization/development, comparative, China
Samuel R. Lucas, Ph.D. University of Wisconsin. Social stratification, social networks, theory
Raka Ray, Ph.D. University of Wisconsin. Political sociology, social movements, gender, research methods

Assistant Professors
Irene Bloommaa, Ph.D. Harvard University. Immigration, political sociology, race and ethnicity
Mason Fournier, Ph.D., McCormick School of Engineering, Economic sociology, culture, political sociology
Dwayne Moon, Ph.D. University of Chicago. Sexuality, religion
Dylan Riley, Ph.D. University of California, Los Angeles. Comparative historical sociology, social theory
Sandra Smith, Ph. D. University of Chicago. Race and ethnicity, social capital and social networks, stratification
Chuan Tugel, Ph.D. University of Michigan. Political sociology, social movements, religion
Reeb Willer, Ph.D. Cornell University. Social psychology, collective action, gender/masculinity

Affiliated Professors
Lauren B. Edelman, Ph.D. Stanford University. Law and society, sociology of organizations, work and labor markets
W. Russell Ellis Jr., Ph.D. University of California at Los Angeles. Sociology in design (Architecture)
James R. Lincoln, Ph.D. University of Wisconsin. Organization theory, Japanese management, organizations
Philippe Nonet, Ph.D. Jurisprudence, sociology of law (Law)
Michael A. Omi, Ph.D. University of California, Santa Cruz. Race and ethnicity (Ethnic Studies)
Stephan M. Schechter, Ph.D. University of Chicago. Medical sociology, organizations (Public Health)
Jerome Skolnick, Ph.D. Yale University. Criminal justice: practice
Chais Thompson, Ph.D. University of California, San Diego. Sociology of science, feminist theory (Rhetoric and Women's studies)

The Major
Students intending to major in sociology are advised to prepare themselves by taking background work in such areas as history, philosophy, cultural anthropology, psychology, economics, and political science.

Prerequisite Courses for the Major. Sociology 3, 3A, and 3AC. Students who have taken 3, 3A or 3AC. Two hours of lecture and two hours of discussion per week. Introduces students who are considering majoring in sociology to the basic topics, concepts, and principles of the discipline. This course is required for the major: 1 or any version of 3 is prerequisite for other sociology classes; students not considering a sociology major are directed to any version of 3.

1. Principles of Sociology. (4) This course is not open to students who have taken 3, 3A or 3AC. Two hours of lecture and two hours of discussion per week. Introduces students who are considering majoring in sociology to the basic topics, concepts, and principles of the discipline. This course is required for the major: 1 or any version of 3 is prerequisite for other sociology classes; students not considering a sociology major are directed to any version of 3.

2. Principles of Sociology. (4) This course will not receive credit for 3 or 3AC after taking 1. Deficiency in 3 or 3AC cannot be removed by completing 3. No credit for 3 after 3A or 3AC. Three hours of lecture per week. An overview of sociology for students who will not major in the field. Sociological approaches to the study of fundamental problems of group life—social organization, culture, interaction processes and socialization—and the dynamics of modern society. Satisfies prerequisite for other sociology courses, but not 3AC.

3AC. Principles of Sociology. (4) This course will not receive credit for 3 or 3AC after taking 1. Deficiency in 3 or 3AC may be removed by completing 3AC. No credit for 3AC after 3 or 3A. Three hours of lecture per week. *Professor of the Graduate School

AC suffix=course satisfies American Cultures

prefix=cross-listed course

R prefix=course satisfies R&C requirement

Sociology / 469

Sociological Perspectives on the Family

Introduction to the range of professional roles and services in social welfare through university-based seminars, agency visits, and professional panels. Taken in the first semester of the MSW program. (F) Staff

The Graduate Program

Information about the graduate program and admissions may be obtained from the departmental graduate office, 422 Barrows Hall, (510) 642-1657. Applications are accepted for the fall semester only; the deadline is December 15.

Courses

For more detailed information about the courses that follow, course descriptions are available in the departmental office, 420 Barrows Hall, several weeks before the beginning of each semester.

Lower Division Courses

1. Introduction to Sociology. (4) Not open to students who have taken 3, 3A or 3AC. Two hours of lecture and two hours of discussion per week. Introduces students who are considering majoring in sociology to the basic topics, concepts, and principles of the discipline. This course is required for the major: 1 or any version of 3 is prerequisite for other sociology classes; students not considering a sociology major are directed to any version of 3.

2. Principles of Sociology. (4) This course is not open to students who have taken 3, 3A or 3AC. Two hours of lecture and two hours of discussion per week. Introduces students who are considering majoring in sociology to the basic topics, concepts, and principles of the discipline. This course is required for the major: 1 or any version of 3 is prerequisite for other sociology classes; students not considering a sociology major are directed to any version of 3.

3. Principles of Sociology. (4) This course will not receive credit for 3 or 3AC after taking 1. Deficiency in 3 or 3AC cannot be removed by completing 3. No credit for 3 after 3A or 3AC. Three hours of lecture per week. An overview of sociology for students who will not major in the field. Sociological approaches to the study of fundamental problems of group life—social organization, culture, interaction processes and socialization—and the dynamics of modern society. Satisfies prerequisite for other sociology courses, but not 3AC.

3AC. Principles of Sociology. (4) This course will not receive credit for 3 or 3AC after taking 1. Deficiency in 3 or 3AC may be removed by completing 3AC. No credit for 3AC after 3 or 3A. Three hours of lecture per week.
Comparing the experience of three out of five ethnic groups (e.g. African Americans, Asian Americans, Chicanos/Latinos, European Americans, and Native Americans), we shall examine historically how each people entered American society and built communities and transformed their cultures in the process. Students will be introduced to the sociological perspective, characteristic methods of research, and such key concepts as culture, race, social class, and social movements. This course satisfies the American Cultures requirement. (F, SP)

5. Evaluation of Evidence. (4) Three hours of lecture and two hours of discussion per week. A review of methodological problems in assessing data relating to social life. Course may be classified as: posing a sociological problem; gaining access to data; measuring, establishing correlation and causal connection among data, and relating data to theoretical context.

24. Freshman Seminars. (1) Course may be repeated for credit as topic varies. One hour of seminar per week. Sections 1-2 to be graded on a letter-grade basis. Sections 3-4 to be graded on a passed/not passed basis. The Berkeley Seminar Program has been designed to provide new students with the opportunity to explore an intellectual topic with a faculty member in a small seminar setting. Berkeley Seminars are offered in all campus departments, and topics vary from department to department and semester to semester.

39. Freshman/Sophomore Seminar. Course may be repeated for credit as topic varies. Sections 1-2 to be graded on a letter-grade basis. Sections 3-4 to be graded on a passed/not passed basis. Prerequisites: Consent of instructor. Freshman and sophomore seminars offer lower division students the opportunity to explore an intellectual topic with a faculty member and a group of peers in a small-seminar setting. These seminars are offered in all campus departments; topics vary from department to department and from semester to semester.

84. Sophomore Seminar. (1, 2) Course may be repeated for credit as topic varies. One hour of seminar per week for 15 weeks. One and one-half hours of seminar per week per unit for 10 weeks. Two hours of seminar per week per unit for eight weeks. Three hours of seminar per week per unit for five weeks. Sections 1-2 to be graded on a letter-grade basis. Sections 3-4 to be graded on a letter-grade basis. Prerequisites: At discretion of instructor. Sophomore seminars are small interactive courses offered by the departments on their respective campuses. Sophomore seminars offer opportunity for close, regular intellectual contact between faculty members and students in the crucial second year. The topics vary from department to department and semester to semester. Enrollment limited to 15 sophomores. (F, SP)

98. Directed Group Study. (1-4) Course may be repeated for credit. One to four hours of directed group study per week. Must be taken on a passed/not passed basis. Prerequisites: Consent of Instructor. Group studies of selected topics which vary over time. (F, SP)

Upper Division Courses

100. In the Sociology Workshop. (1) One hour of prosemining per week taken on a passed/not passed basis. Prerequisites: Declared sociology major or consent of instructor. In this prosemining course, the student will become familiar with faculty and their various research interests. Sections 3-4 to be of their ongoing work and allows students to address questions within and about the discipline. (SP)

101A. Sociological Theory. (5) Three hours of lecture and two hours of discussion per week. Prerequisites: 1, 3 or 3AC or consent of instructor. History of social thought as a source of present-day problems and hypotheses.

101B. Sociological Theory. (5) Three hours of lecture and two hours of discussion per week. Prerequisites: 101A. History of social thought as a source of present-day problems and hypotheses.

101C. Contemporary Sociological Theory. (4) Three hours of lecture per week. Prerequisites: 101A-101B or consent of instructor. A systematic study of the work of selected social theorists of the post-WWII era. This course will stress the diversity of orientations in the field and will follow a comparative approach to the study of theory. The choice of theorists to be covered will vary according to the instructor.

102. Advanced Study in Social Theory. Three hours of lecture per week. Prerequisites: A course in social theory or consent of instructor. Prerequisites: Consent of instructor. Courses under this number involve pursuing study in subfields of sociological theory. The courses present a general background in social theory to the instructor as to whether your background is appropriate.

105. Introduction to Sociological Methods. (3) Three hours of lecture and two hours of discussion per week. Prerequisites: 5 or consent of instructor. Problems of research design, measurement, and data collection, processing, and analysis will be considered. Attention will be given to both qualitative and quantitative studies. (F)

106. Intermediate Sociological Methods. (4) Two hours of seminar per week and individual conferences. Prerequisites: 105 or consent of instructor. This course will cover more technical aspects of empirical research methods introduced in 105, and will include, according to discretion of instructor, a practicum in data collection and/or analysis. Recommended for students interested in graduate work in sociology or research careers. (SP) Goodwin

107A-107B. Field Research: Participant Observation. (4-5) Three hours of lecture per week. Credit and grade to be awarded on completion of sequence. This course will cover more technical aspects of quantitative research methods introduced in 105, and will include, according to discretion of instructor, a practicum in data collection and/or analysis. Recommended for students interested in graduate work in sociology or research careers. (SP) Goodwin

110. Organizations and Institutions. (4) Three hours of lecture per week. Prerequisites: 105 or consent of instructor. Administrative organizations and voluntary associations; major social institutions in industry, government, religion, and education.

111. Sociology of the Family. (4) Three hours of lecture and one hour of discussion per week. Prerequisites: 1 or 3AC or consent of instructor. An intermediate course in the family. This class explores family and social change in all its forms, from the family of origin to the nuclear family, from the family structure and functions to the behavior of family members, focusing on gender, sexuality, and family diversity.

112. Sociology of Religion. (4) Three hours of lecture and two hours of discussion per week. Prerequisites: 1 or 3AC or consent of instructor. The role of religion in social action. The role of religious groups in social action. The role of religious leaders in social action.

113. Sociology of Education. (4) Three hours of lecture and two hours of discussion per week. Prerequisites: 1 or 3AC or consent of instructor. The role of education in social action. The role of educational institutions in social action. The role of education in social change; social aspects of the administration of justice; social knowledge and the law. (F, SP)

114. Sociology of Law. (4) Three hours of lecture and one and one-half hours of discussion per week. Prerequisites: 1, 3, 3AC or consent of instructor. The labor force; social control within and of occupations and professions (professionalization, professional associations vs. labor unions, codes of ethics, legal controls); social structure of the workplace; work experience of the participants; relation of both to community and society. (F, SP)

115. Deviance and Social Control. (3) Three hours of lecture and two hours of discussion per week. Prerequisites: 1, 3, 3AC or consent of instructor. A consideration of forms, causes, and controls of deviant behavior. (F, SP)

116. Sociology of Work. (4) Three hours of lecture and two hours of discussion per week. Prerequisites: 1, 3, 3AC or consent of instructor. The labor force; social control within and of occupations and professions (professionalization, professional associations vs. labor unions, codes of ethics, legal controls); social structure of the workplace; work experience of the participants; relation of both to community and society. (F, SP)

117. Sport as a Social Institution. (4) Three hours of lecture per week. Prerequisites: 1 or 3 or 3AC or consent of instructor. Analysis of sport as social institution, its structure and functions, major social institutions associated with sport, and the sociology of sport—race and sport; economics of sport; the roles of coach, athlete, fan—their interrelationships and complexities; current turmoil in sport, and the ideological struggle which has emerged.

122. Comparative Perspectives on U.S. and European Societies. (4) Students will receive no credit for 122 after taking 180 in Spring 2005. Three hours of lecture per week. Prerequisites: 1, 3, 3AC, or consent of instructor. Introduction to social dynamics of modern societies through systematic comparisons of the U.S. to European countries in several domains. It starts with discussing the broader social organizations of the two societies in terms of the market, the political economy, personal systems, and welfare systems. It continues with analyses of central social changes, social problems, and institutions in the societies, including the topics of gender inequality, immigration, rising inequality, religion, individualism, educational institutions, and health systems. (F, SP)

124. Sociology of Poverty. (4) Deficiency in 124AC cannot be removed by completing 124. No credit for 124 after 124AC. Three hours of lecture per week. Prerequisites: Introductory sociology or consent of instructor. This course will examine the causes of poverty. It will examine a number of theories on the causes of poverty, then turn to an examination of empirical studies concerning the trends and determinants of poverty, followed by an examination of the everyday life of those who live in the condition of poverty. This course will conclude with a look at social policy toward poverty. The course will focus primarily, although not exclusively, on poverty in the U.S. While there will be some readings concerning rural poverty, the course will have a decidedly urban focus. (F, SP) Sanchez-Jankowski

125. Urban Sociology. (4) Deficiency in 125AC cannot be removed by completing 125. No credit for 125 after 125AC. Three hours of lecture per week. Prerequisites: 1 or 3 or 3AC or consent of instructor. The nature, causes, consequences of world urbanization; metropolitan areas; location and types of cities, social
and demographic characteristics of urban populations. (F,SP)

126. Social Consequences of Population Dynamics. (4) Three hours of lecture and one hour of discussion per week. Prerequisites: 1 or 3 or 3AC or consent of instructor. This course will seek to explain population issues and to population issues in the field of demography, with emphasis on historical patterns of population growth and change during the industrial era. Topics covered include the demographic transition, economic-development, economic development, the environment, population control, family planning, birth control, family and gender, aging, intergenerational transfers, and international migration. Also listed as Demography C126.

127. Family and Household in Comparative Perspective. (3) Three hours of lecture per week. Prerequisites: 1, 3, 3AC or consent of instructor. Formerly 127. How are families and households organized around the world? Which aspects of household and family vary, and which are constant? What are the relationships between household and family on the one hand and the political, economic, or broad social patterns on the other? This course examines all of these questions, taking historical and contemporary examples found in Africa, Asia, Europe, and the Americas. Also listed as Demography C126. (F,SP)

128. Society and the Environment. (4) Students may remove a deficiency in 128 by taking either 128AC or Environmental Science, Policy, and Management 163AC. Three hours of lecture per week. Prerequisites: 1 or 3 or 3AC or consent of instructor. Living in an urban area at the end of the 20th century, it is easy to forget how germane the biophysical world is to our lives. This course seeks to explore the relationships between society and the environment as they have varied over time and across societies. The approach taken will be broadly historical and multicultural and will include readings on the social construction of nature, ecotourism, industrialization and natural resource use, social movements and the environment, and the environmental impacts of late capitalism. (F, SP)

128AC. Environmental Justice: Race, Class, Equity, and the Environment. (4) Two hours of lecture and one hour of discussion per week. Overview of the field of environmental justice, analyzing the implications of race, class, labor, and equity on environmental degradation and regulation. Environmental justice movements and struggles within poor communities and communities of color in the U.S., including African Americans, Latino Americans, and Native American Indians. Frameworks and methods for analyzing race, class, and labor: Cases of environmental injustice, community organizing, government responses, and future strategies for achieving environmental and labor justice. Also listed as Environmental Sci, Policy, and Management 163AC. This course satisfies the American Cultures requirement. (F) O’Rourke

130. Social Stratification. (4) Three hours of lecture per week. Prerequisites: 1 or 3 or 3AC or consent of instructor. Recent trends in occupational stratification; social classes in local communities and the nation as related to interest organizations.

131A. Race and Ethnic Relations: The United States Experience. (4) Deficiency in 131A cannot be removed by completing 131AC. No credit for 131A after 131AC. Three hours of lecture per week. Prerequisites: 1 or 3 or 3AC or consent of instructor. Course focuses on race and ethnic relations in the United States. Examination of historical experiences, contemporary circumstances, and future prospects of racial and ethnic populations with particular attention to trends in relations between the dominant society and the African American, Native American, Asian American, and Latino subcultures. Political and social consequences of racial and ethnic stratification are explored. Also listed as Soci 131A. (F,SP)

131B. Race and Ethnic Relations: International Comparisons. (4) Three hours of lecture per week. Prerequisites: 1 or 3 or 3AC or consent of instructor. Historical and comparative analyses of race and ethnic relations. Exploration of key institutions such as family, state, and workplace. This course will enable you to understand the social, economic, and cultural factors that create gender and shape what it means to be a man or a woman. Consideration of feminist movements, in a global context, and of movements to social class, sexuality, age, race/ethnicity, and nationality. (F, SP)

132. Race and Ethnic Relations: Selected Topics. (4) Course may be repeated for credit as topic varies. No credit for 132 after taking 132AC. Three hours of lecture per week. Prerequisites: 1 or 3 or 3AC or consent of instructor. A broad survey of race and ethnic relations in a wide variety of nations and periods, with special attention to comparisons of past patterns in the United States. Emphasis on: social, economic, political, institutional, social psychological, and demographic processes. (F,SP)

132AC. Three hours of lecture per week. Prerequisites: 1 or 3 or 3AC or consent of instructor. The course will vary depending on the instructor in charge. Possibilities include: symbolic interactionism, social psychological, and demographic processes. (F,SP)

135. Sexual Cultures. (4) Three hours of lecture per week. Prerequisites: 1 or 3 or 3AC or consent of instructor. Examination of cultural and social contexts, desires, and practices as socially, historically, and culturally meaning making. We will look at how people reproduce dominant models of sexuality, as well as our wide range of people—including lesbians, bisexuals, gay men, transgenderists, and self-described sex-positive individuals—operate through dominant models of sexuality. Looking at empirical studies and theoretical texts, we will trace the paradigm shift from mid-19th century sexology to early 20th century psychoanalysis, through a variety of approaches in the 1960s and 1970s to the feminist and queer theory of recent decades. (F,SP)

140. Political Sociology. (4) Three hours of lecture and two hours of discussion per week. Prerequisites: 1 or 3 or 3AC or consent of instructor. The study of the relationship between politics, through an analysis of the intersection of economic development, social relations, and the political sphere. Examines how class, race, ethnicity, and gender interact with political culture and the state. The course also looks at diverse forms of political behavior, a key aspect of politics.

141. Social Movements and Political Action. (4) Three hours of lecture per week. Prerequisites: 1 or 3 or 3AC or consent of instructor. Social movements, the formation of public opinion, and the behavior of interest groups. (F,SP)

143. Policy, Economy, and Society. (4) Three hours of lecture per week. Prerequisites: 1 or 3 or 3AC or consent of instructor. Focus on three major themes of the contemporary United States: government, resources, and cities. Stress on the importance of transition from the 1960s. Examination of how each sector is influenced by policy currents, economic trends, and social conflicts.

150. Social Psychology. (4) Three hours of lecture per week. Prerequisites: 1 or 3 or 3AC or consent of instructor. An examination of major theoretical approaches in social psychology. The approaches may include: learning, conditioning, persuasion, social judgment, psychodynamic analyses, cognitive theories, interpersonal processes and theories of exchange. (F,SP)

155. Sociology of Illness and Medicine. (4) Three hours of lecture per week. Prerequisites: 1 or 3 or 3AC or consent of instructor. Social and cultural factors associated with the defined and experienced illness. Analysis of the socially defined “sick role” and the systems of which it is a part. (F,SP)

156. Thought Reform, Influence and Social Control. (4) No credit for 156 after taking 153. Three hours of lecture per week. Prerequisites: 1 or 3 or 3AC or consent of instructor. Thought reform and extreme methods of social control in the Soviet Union, China, and in American culture. American examples include religious, political, and therapeutic cults. Issues of recruitment, management and the evolution of violence and terrorism are addressed.

160. Sociology of Culture. (4) Three hours of lecture and two hours of discussion per week. Prerequisites: 1 or 3 or 3AC or consent of instructor. Study of human systems, patterns recorded in art, literature, music, and other media. Includes study of the production, reception, and aesthetic experience of cultural forms. (F,SP)

170. Social Change. (4) Three hours of lecture per week. Prerequisites: 1 or 3 or 3AC or consent of instructor. Study of major sociocultural changes in the sources of these changes; the processes through which they spread; their meaning for individuals and institutions. (F,SP)

170AC. Social Change. (4) Students may remove a deficiency in 170 by taking 170AC but a deficiency in 170AC cannot be removed by taking 170. Students will not receive credit for 170AC after taking 170 and vice versa. Three hours of lecture per week. Prerequisites: Sociology 1, 3, or 3AC. This course will seek to explain the formation of modern United States society, inquiring into the processes of social change that have brought us to the present as well as created possibilities for the future. Race, nationalism, and ethnicity—conceptual tools against which national and multiculturalism—are central dimensions of social change in the United States. The course will explore the processes of social change as they affect and are affected by different racial and ethnic groups in the United States. This course satisfies the American Cultures requirement. Barlow

171. Historical Sociology. (4) Three hours of lecture per week. Prerequisites: 1 or 3 or 3AC or consent of instructor. Study of the major concepts, problems and trends in the field of historical sociology, with attention to such topics as industrialization, revolution, transformation of social structure, social life, political authority, institutions and culture viewed from an historical and comparative perspective.

172. Development and Globalization. (4) Three hours of lecture and two hours of discussion per week. Prerequisites: 1 or 3 or 3AC or consent of instructor. A comparative analysis of socio-economic and political change, focusing on the poor countries of Asia, Africa, Latin America. Often considered “underdeveloped,” the concept is deconstructive, involving a critique of modernization theory. The course will explore the processes of social change as they affect and are affected by different racial and ethnic groups in the United States. This course satisfies the American Cultures requirement. Barlow

180. American Sociology. (4) Three hours of lecture per week. Prerequisites: 1 or 3 or 3AC or consent of instructor. Study of the major concepts, problems and trends in the field of historical sociology, with attention to such topics as industrialization, revolution, transformation of social structure, social life, political authority, institutions and culture viewed from an historical and comparative perspective.

B prefix=language course for business majors
C prefix=course cross-listed course
H prefix=honors course
R prefix=course satisfies R&G requirement
S prefix=course satisfies American Cultures requirement
*Professor of the Graduate School
†Recipient of Distinguished Teaching Award
183. Contemporary Chinese Society. (4) Students will receive no credit for 183 after taking C183. Three hours of lecture per week. Prerequisites: 1 or 3 or 3AC or consent of instructor. An introduction to institutions, social groups, and values in contemporary Chinese society. Dynamics of social change in a revolutionary and post-revolutionary setting. Trends in the future development of Chinese society.

C183. China in the 1990s: Reporting the Contradictions. (4) No credit for Students who have taken C183 after taking Sociology 183. Three hours of lecture and one hour of discussion per week. Prerequisites: 1, 3, 3AC or consent of instructor. Formerly 183. This interdisciplinary course introduces students to sociological methods to understand the dramatic social consequences of the economic reforms underway in China since 1978, while examining the practical problems of how the Chinese media and American media represent these developments to audiences at home and abroad. Sociological topics include change in Communist Party/state-society relations; decollectivization of the rural economy; ownership reform in the urban economy; and realization of the urban residence control system. Journalistic problems include how do attitudes toward information, censorship, and secrecy affect professional news gathering; and influence on society agendas. Also listed as Journalism C183, Gold, Westman.

189. Selected Topics in Area Studies. (4) Course may be repeated for credit as topics vary. Three hours of lecture per week. Prerequisites: 1 or 3 or 3AC or consent of instructor. There will be a variation in areas studied, depending on the instructor in charge. Possibilities include the study of one society or a particular aspect of one society, consideration in-depth of specific theoretical or methodological issues within area studies, or comparative regional studies.

190. Seminar on Advanced Topics. (4) Course may be repeated for credit as topics vary. Two hours of seminar per week and individual conferences. Prerequisites: 1 or 3 or 3AC or consent of instructor. Advanced study in sociology, with specific topics to be announced at the beginning of each semester. (F,SP)

190AC. Seminar on Immigration in the United States. (4) Two hours of seminar per week. Prerequisites: 1, 3, 3AC, or consent of instructor. This course examines the impact of immigration, both from the perspective of the receiving society and from the lived experience of the immigrants themselves. We will focus in particular on migration, incorporation, and citizenship processes in the U.S., but will also touch on the experiences of other countries. This course satisfies the American Cultures requirement. Bloemraad

H190A-H190B. Senior Honors Thesis and Seminar. (4,5) Two hours of seminar per week and individual conferences. Prerequisites: 1 or 3 or 3AC or consent of instructor. This course will allow students to develop honors in the department’s honors program. This course will expose students in the department’s honors program to the ongoing research of a broad range of practicing sociologists through analysis of the weekly departmental colloquia. Students will prepare for each colloquium by reading written work by the speaker and will follow up with a response paper.

194. Writing Seminar. (3) Three hours of seminar per week. Prerequisites: 1, 3, 3AC, or consent of instructor. This seminar is intended for those who are interested in writing a longer research-based paper. It is designed to improve writing skills, with a focus on empirical sociological research. Students will be required to conduct, write, and present an original research project. The seminar will also have a set of substantive readings, which will help students with specific substantive interests focus their work. The readings will vary by year and instructor, and may cover topics such as immigration, ethnicity, and poverty.

C196W. Special Field Research. (10,5) Course may be repeated for a maximum of 12 units. 240-300 hours of work per semester plus regular meetings with the faculty supervisor. Students will be expected to produce two or three progress reports for their faculty coordinator during the course of the internship, as well as a final paper for the course consisting of at least 35 pages. Other restrictions apply; see faculty adviser. Also listed as Gender and Women’s Studies C196W, History of Art C196W, Undergraduate Interdisciplinary Studies C196W, Communications C196W, History C196W, Political Economy of the Industrial Soc C196W, and Political Sci C196W.

197. Field Study in Sociology. (1-4) Course may be repeated for credit. Must be taken on a passed/not passed basis. Prerequisites: 1 or 3 or 3AC or consent of instructor. Supervised experience relevant to specific topics available for funding via research and teaching assistantships for specific fieldwork and internships. Reg- ular individual meetings with faculty sponsor and written reports required. (F,SP)

198. Directed Group Study for Undergraduates. (1-4) Course may be repeated for credit. Individual conferences. Must be taken on a passed/not passed basis. Prerequisites: 1 or 3 or 3AC or consent of instructor. Group studies of selected topics which vary over time. (F,SP)

199. Supervised Independent Study and Research. (1-4) Course may be repeated for credit. Individual conferences. Must be taken on a passed/not passed basis. Prerequisites: 1 or 3 or 3AC or consent of instructor. Enrollment restrictions apply; see the Introduction to Courses and Curricula section of this catalog. (F,SP)

Graduate Courses

200. Proseminar. (1) One hour of lecture per week. Must be taken on a satisfactory/unsatisfactory basis. This proseminar is required of all first-year graduate students and is supervised by a regular faculty member. The seminar will familiarize students with faculty and their various research interests and of opportunities available for funding via research and teaching assistantships. It consists of presentations by faculty on their past, present and future research and by representatives of Organized Research Units on their mission, programs of research, and opportunities for assistantships.

201. Sociological Theory. (4) Four hours of lecture per week. Prerequisites: Consent of instructor. Representatives of major theoretical traditions in sociology will be examined historically and critically. An effort will be made to make substantive and methodological issues that arise in sociological theorizing. This is the required M.A. theory course.

202. Advanced Study in Sociology Theory. Course may be repeated for credit. Two hours of seminar per week. Prerequisite: Theoretical traditions. Will be selected for intensive study, according to the interests of the instructor. Graduate students must take at least one 202 before taking the qualifying examination.

202A. Classical Sociological Theory. (3)

202B. Contemporary Sociological Theory. (3)

205. Supervised Preparatory coursework, Prerequisites: Consultation with and approval of regular faculty member responsible. Introductory study of a sociological field, among those listed in the 280 series, including participation in the appropriate undergraduate course in that field. Also includes individual meetings with the faculty sponsor, who may stipulate additional requirements.

205A. Law and Deviance. (3)

205B. Race and Ethnic Relations. (3)

205C. Political Sociology. (3)

205D. Organizations. (3)

205E. Industrial Sociology. (3)

205F. Family and Life Cycle. (3)

205G. Social Stratification and Class Analysis. (3)

205H. Development and Modernization. (3)

205I. Religion. (3)

205J. Urban Sociology. (3)

205K. Social Psychology. (3)

205L. Gender. (3)

205M. Culture. (3)

205N. Education. (3)

205O. Health and Medicine. (3)

205P. Area Studies. Course may be repeated for credit as topic varies.

205Q. Economy and Society. (3)

205R. Professions. (3)

205S. Social Movements. (3)

205U. Society and Environment. (3)

205V. Society and Technology. (3)

205W. Sexuality. (3) Three hours of lecture per week.

C220. Population and Society. (3) Three hours of seminar per week. Prerequisites: Consent of instructor. Graduate standing. This course addresses a variety of topics lying at the intersection of sociology and demography. Topics covered will vary depending on the interests of instructors and students and may often be connected to recent events or new directions in research. Examples of possible topics include reproductive behaviors and technologies, inequality within and across populations, effects of globalization, social policies affecting demographic events (e.g., marriage, fertility, health, migration), and cohort analysis. Also listed as Demography C200. (F,SP)

271A-271C. Methods of Sociological Research. (4,3,3) 271A: Four hours of lecture per week, 271B-271C: Two hours of lecture and two hours of labora- tory per week. Prerequisites: Consent of instructor. A three-semester sequence course introducing logical and analytic techniques commonly employed in social science research. The methodological problems encountered in field work, historical and comparative in- quiry, experimental research, and survey analysis. The first semester concentrates on techniques for gather- ing evidence; the second and third semesters focuses on beginning and intermediate numerical techniques for analyzing evidence.

271D. Quantitative/Statistical Research Methods in Social Sciences. (3) Two hours of lecture per week. Prerequisites: Consent of instructor. Selected topics in quantitative/statistical methods of research in the social sciences and particularly in sociology. Possi- ble topics include: analysis of qualitative/categorical data; loglinear models and latent structure analysis; the analysis of cross-classified data having ordered and unordered categories; measure, models, and graph- cal displays in the analysis of cross-classified data; corre- spondence analysis, association analysis, and related methods of data analysis. Also listed as Statistics C261.

272. Studies in Sociological Research Methods. Course may be repeated for credit. Prerequisites: Consent of instructor. Courses under this number involve pursuing graduate study in subfields of sociological research methods.

272A. Logic of Inquiry. (3)

272C. Comparative and Historical Research. (3)

272D. Quantitative Statistical Research. (3)

272E. Participant Observation. (3)

272F. Interview Methods. (3)

273. Advanced Seminars in Research Methods. Course may be repeated for credit. Two hours of seminar per week. Seminar in advanced sociological research methods.
280. Advanced Study in Substantive Sociological Fields. Course may be repeated for credit. Two hours of lecture per week. Prerequisites: Undergraduate preparation in the field; completion of a 205 in the field or an equivalent determined by the instructor. Courses under this number involve pursuing graduate study in substantive sociological subfields. The courses presume familiarity with the fields of study. Consult departmental catalog for current descriptions.

280A. Law and Deviance. (3)
280B. Race and Ethnic Relations. (3)
280C. Political Sociology. (3)
280D. Organizations. (3)
280E. Sociology of Work. (3)
280F. Family and Life Cycle. (3)
280G. Social Stratification and Class Analysis. (3)
280H. Development and Modernization. (3)
280I. Urban Sociology. (3)
280K. Social Psychology. (3)
280L. Gender. (3)
280M. Culture. (3)
280N. Education. (3)
280P. Area Studies. (3)
280Q. Economy and Society. (3)
280R. Professions. (3)
280S. Social Movements. (3)
280T. Rural Sociology. (3)
280W. Sexuality. (3) In this course, we address a wide range of social theories and sociological investigations of sexuality as it is conceptualized and experienced in social context. Theoretical approaches to sexuality may include psychoanalytic, feminist, Marxist, symbolic-interactionist, and discursive/post-structural approaches to understanding how sexual categories vary over time and across cultures, how people identify with or against them, and how social power works through time.

280X. Immigration and Incorporation. (3) This seminar examines the dynamics of migration, integration, and citizenship, both from the perspective of the receiving society and from the lived experiences of migrants themselves. The seminar focuses on processes of incorporation—economic, social, cultural, and political—but we also look at paradigms that challenge an integratist reading of migration, in particular transnationalism and models of postnational citizenship.

280Y. Sociology of Globalization. (3) Two hours of seminar per week. Sociology now analyzes social organization that transcends national boundaries, not just as linking national societies or as influencing national societies but as a phenomenon in its own right. This course brings together a selection of literature that looks at transnational social organizations and the distinct dynamics of global political economy and culture and offers a sociological perspective on what lies behind the vague and confusing label of "globalization."

280Z. Social Policy. (3) This course will examine the major theoretical arguments that seek to account for the development of social policy, including arguments about the power of social forces such as business and labor, the role of racial and ethnic division, the influence of ideas, and the organizational features of the state. The course readings examine developments in the United States with some comparison to other countries.

285. Dissertation Seminar. (3) Course may be repeated for credit. Three hours of lecture per week. Must be taken on a pass/fail basis. Prerequisites: Consent of instructor. The seminar is a forum for intensive attention to writing of seminar members at any stage from initial planning of the dissertation presentation talk. We will be especially concerned with reflective issues: the choice of problem and method as a sociological, political, personal, and market issue; the place of the researcher in research; sociology as a discipline and interdisciplinary. Problems of organization, scope, theoretical and empirical emphasis will also be addressed.

286. Professional Writing Seminar. (3) Three hours of lecture/workshop per week. Must be taken on a satisfactory/unsatisfactory basis. Prerequisites: Consent of instructor. This seminar is a workshop for professional writing for sociologists. We will focus on editing, rewriting, re-organizing, and polishing students' papers with the goal of completing a paper appropriate for the professional journals. In addition, we will cover several topics in writing, including psychological inhibition, style, journal instructions, writing for the general public, and the world of book publishing. Class time will be divided into short lectures and workshop periods, during which we will discuss work in-progress and do some collective editing of sample texts.

290. Seminar. (3) Course may be repeated for credit as topic varies. Two hours of seminar per week. Prerequisites: Consent of instructor. Advanced study in modern sociology. The specific topics will be announced at the beginning of each semester.

292. Advanced Research Seminar. (1) One hour of seminar per week or two hours of seminar every other week. May be repeated for credit. Prerequisites: Consent of instructor, satisfactory/unsatisfactory basis. The purpose of this seminar is to provide participants with an opportunity to present their work-in-progress, be it a potential academic journal submission, dissertation chapter, dissertation prospectus or even a draft interview schedule. Through a process of peer-review, we will work on improving each participant's written work, and to stay abreast of the diverse work being done in the field of the seminar's topic.

295. Independent Study for Graduate Students in Sociology. (1-12) Course may be repeated for credit. Independent study, variable hours. Must be taken on a satisfactory/unsatisfactory basis. Prerequisites: Consent of instructor. By arrangement with faculty. (F,SP)

296. Directed Dissertation Research. (1-12) Course may be repeated for credit. The course is designed for advanced credit. Must be taken on a satisfactory/unsatisfactory basis. Prerequisites: Consent of instructor. By arrangement with faculty. Open to qualified students advanced to candidacy. (F,SP)

298. Directed Group Studies for Graduates. (1-9) Course may be repeated for credit. Group conferences. Prerequisites: Consent of instructor. Group studies of selected topics which vary from year to year.

299. Individual Study and Research. (1-9) Course may be repeated for credit. Individual conferences. Prerequisites: Consent of instructor. Group studies of selected topics which vary from year to year. May not be included in the 9 units required for the master's degree.

401. Professional Training: Teachers. (3-6) Course may be repeated for credit. Units may not be used to meet unit or residency requirements for either the master's or doctoral degree. Must be taken on a satisfactory/unsatisfactory basis.

402. Professional Training: Research. (3-6) Course may be repeated for credit. Must be taken on a satisfactory/unsatisfactory basis. Units may not be used to meet unit or residency requirements for either the master's or doctoral degree.
Amination in demographic methods and substance; a foreign language examination; an oral qualifying examination covering four fields of study (sociological theory, general anthropology, and two specialized fields); and a Ph.D. dissertation. For details, see the graduate adviser.

South and Southeast Asian Studies

(College of Letters and Science)

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Website: http://ssea.berkeley.edu
Chair: Alexander von Rospott, Ph.D.

Professors

Vasudha Dalima, Ph.D. Jawaharlal Nehru University. Hindi language and literature, Sanskrit, Hindustani
†Robert F. Goldman, Ph.D. University of Pennsylvania. Sanskrit literature, Indian epics
†George L. Hart III, Ph.D. Harvard University. Tamil language and literature
†Alexander von Rospott, Ph.D. University of Hamburg. Buddhist Studies, Buddhism in South Asia
†Joanna Williams, Ph.D. University of Wisconsin. Southeast Asian art
†Joel W. Pondaag, Ph.D. Science Po. Southeast Asia
†Vasudha Dalmia, Ph.D. Jawaharlal Nehru University. Hindi literature

Associate Professors

Lawrence Cohen, Ph.D. Harvard University. Medical anthropology
†Bruce R. Fray, (Emeritus), Ph.D. University of Michigan. Hindi/Urdu language and literature
†Barend A. van Nooten, (Emeritus), Ph.D. University of Michigan. Tamil language and linguistics
†Vasudha Dalmia, Ph.D. Jawaharlal Nehru University. Hindi literature

Assistant Professors

Penelope Edwards, Ph.D. Monash University. Southeast Asian studies
†Munis Fatuqui, Ph.D. Duke University. South Asian Islam
†Jeffrey Hadler, Ph.D. Cornell University. Southeast Asian ethnography

Senior Lecturer

†Usha R. Jain, M.A. University of California. Hindi language

Lecturers

Sally J. Sutherland Goldman, Ph.D. University of California, Berkeley. Javanese language, Indonesian philosophy
†Kausalya Hart, M.A. Annamalai University. Tamil language and literature
†Susan F. Kepner, Ph.D. University of California, Berkeley. Thai language and literature
†Ninik Lund, M.A. University of Wisconsin. Indonesian language
†Ima Pe, M.A. University of Hawaii, Manoa. Tagalog language
†Bac Tran, M.A. San Francisco State University. Vietnamese language, linguistics
†Hanh Tran, B.S. National University of Social Sciences and Humanities, Vietnam. Vietnamese language
†Upkar K. Uher, B.A. Honors, University of London. Punjabi language, linguistics, and literature

Undergraduate Adviser: Prof. von Rospott

Graduate Adviser: Prof. Dalima

Department Overview

The Department of South and Southeast Asian Studies offers programs of both undergraduate and graduate instruction in the languages and cultures of South and Southeast Asia. It offers opportunities to explore the rich cultural, social, and religious histories as well as the living contemporary cultures of these areas. The curriculum covers the classical literary canon, religious literature, folk and popular works, oral traditions and performance media (including recitation, musical and dramatic performance, dance, media, and film), and modern literatures of the colonial and post-colonial period.

Students are encouraged to take advantage of the extensive opportunities for interdisciplinary linkages by pursuing courses offered by the South and Southeast Asia faculty in other departments at Berkeley. Students are also encouraged to pursue courses and independent readings that will acquaint them with pertinent methods in the various disciplines such as contemporary literary theory, ethnographic theory, historiography, and cultural studies. Appropriate comparative work on Asian and non-Asian cultures is encouraged as well.

The Major

The two tracks in the South and Southeast Asian Studies major are flexible, interdisciplinary programs offering opportunities for both wide, comparative study of South and Southeast Asia cultures and greater concentration on a particular area of interest and geographical focus.

With the guidance of the faculty and staff advisers, students might choose to pursue, for example, intense study of a language and its literature or broader inquiries into such subjects as the religions of traditional and modern South and Southeast Asia. Students may include their major programs suitable courses from other departments.

1. South and Southeast Asian Civilizations

Students pursuing this track must complete one lower-division course on either the civilization and culture of South Asia (SA 5A, SB) or the civilization of Southeast Asia (SEA 10A, 10B).

Students must also complete a minimum of nine additional courses concerning South or Southeast Asia, at least eight of which must be upper-division and at least four of which must be taken in the Department.

In consultation with the adviser, students will choose an area of interest (religion or art history or literature) and the two courses of the nine described above should cover this area of interest. At least three courses in the area of interest are recommended.

2. South and Southeast Asian Languages and Literatures

Students choosing this track must complete one lower-division sequence on either the civilization and culture of South Asia (SA 5A, SB) or the civilization of Southeast Asia (SEA 10A, 10B) and four courses in the civilization of South or Southeast Asia (SEA 10A, 10B) or the civilization of South or Southeast Asia (SEA 10A, 10B). Students must also complete a minimum of four upper division courses concerning South or Southeast Asia, at least half of which must be taken in the department.

Students who are considering graduate-level study of South or Southeast Asia are strongly advised to choose the Language and Literatures emphasis. This would provide the minimum level of language preparation required for most graduate programs.

The Minor

The minimum requirements for the completion of a minor program are five upper division courses, of which a minimum of three are in the Department. All courses in the minor program must be completed on a letter-graded basis. An overall grade-point average of 2.0 is required in courses used for the minor program.

Hons Program

To be eligible for admission to the honors program, students must attain a 3.5 grade-point average or higher in courses completed in the major, and a 3.3 grade-point average in all courses completed in the University. An honors thesis is required. Students who wish to participate must choose a thesis topic in consultation with their major adviser and apply for admission to the program through the departmental office no later than the first week of spring semester of the senior year.

The M.A./Ph.D. Program

This program offers emphases in the following languages and literatures: Hindi, Indonesian, Khmer, Sanskrit, Tamil, and Urdu. Literature is understood in the widest sense to include not only creative writing and cultural expression in the various genres but also sources concerning religion, philosophy, history, and the fine and performing arts. The analysis of cultural expression is also understood to include attention to social, anthropological, economic, and political contexts.

Prerequisites

The prerequisites for admission to the M.A./Ph.D. Program are two years of study in the language of emphasis or the equivalent, and eight undergraduate or graduate courses dealing with South or Southeast Asia or the equivalent. Candidates with insufficient preparation are advised to apply to the M.A. program (see below). At the conclusion of the M.A. degree, students will be informed as to whether they are eligible for admission to the Ph.D. program.

Degree Requirements

The general requirements for the degree are a minimum of 10 courses undertaken in graduate status at Berkeley (including at least four graduate seminars in the language of emphasis and the methods seminar); a historical knowledge of the area of emphasis; completion of an M.A. thesis (also required of transfer students holding the M.A. who have not completed equivalent coursework); and appropriate secondary languages.

Ph.D. candidates will complete an oral qualifying examination in three approved fields (the field of emphasis, a secondary field within the department, and a cognate field); submit a dissertation prospectus; advance to Ph.D. candidacy; and complete the dissertation under Plan B (see Index for Graduate Education). The Sanskrit emphasis also requires completion of a written competency examination in Sanskrit and one course in linguistics. Students in the joint M.A./Ph.D. program will acquire the M.A. degree upon completion of 20 units of coursework in graduate status at Berkeley (including two graduate seminars in the language of emphasis and the methods seminar); demonstration of advanced competence in the language of emphasis; demonstration of historical knowledge; advancement to M.A. candidacy; and completion of thesis. They will acquire the Ph.D. degree upon completion of the remaining requirements. A thesis topic should be identified during the second semester of the program, and at the latest, by the beginning of the third semester, under the University’s Plan I (see Graduate Education). The M.A. thesis in South and Southeast studies is expected to run between 25 and 50 pages, double-spaced, typed, with footnotes and bibliography. Upon completion of the M.A. requirements, students will be reviewed by the faculty to determine whether they

The general requirements for the degree are a minimum of 10 courses undertaken in graduate status at Berkeley (including at least four graduate seminars in the language of emphasis and the methods seminar); a historical knowledge of the area of emphasis; completion of an M.A. thesis (also required of transfer students holding the M.A. who have not completed equivalent coursework); and appropriate secondary languages.

Ph.D. candidates will complete an oral qualifying examination in three approved fields (the field of emphasis, a secondary field within the department, and a cognate field); submit a dissertation prospectus; advance to Ph.D. candidacy; and complete the dissertation under Plan B (see Index for Graduate Education). The Sanskrit emphasis also requires completion of a written competency examination in Sanskrit and one course in linguistics. Students in the joint M.A./Ph.D. program will acquire the M.A. degree upon completion of 20 units of coursework in graduate status at Berkeley (including two graduate seminars in the language of emphasis and the methods seminar); demonstration of advanced competence in the language of emphasis; demonstration of historical knowledge; advancement to M.A. candidacy; and completion of thesis. They will acquire the Ph.D. degree upon completion of the remaining requirements. A thesis topic should be identified during the second semester of the program, and at the latest, by the beginning of the third semester, under the University’s Plan I (see Graduate Education). The M.A. thesis in South and Southeast studies is expected to run between 25 and 50 pages, double-spaced, typed, with footnotes and bibliography. Upon completion of the M.A. requirements, students will be reviewed by the faculty to determine whether they...
are making satisfactory progress and should continue in the program.

Students should carefully plan their courses so as to be ready, normally after six semesters, to concentrate on reading for their Ph.D. oral qualifying examination (which should be taken in the seventh or eighth semester). Students may enroll in courses beyond the 10-course minimum and may audit courses with the permission of instructors. Students are expected to complete the requirements within two years. For more detailed information about the Ph.D. consult the department web site at ls.berkeley.edu/dept/seeas/programs/graduate_program.html.

South and Southeast Asian
Lower Division Courses

R5A. Self, Representation, and Nation. (4) Three hours of lecture and one hour of discussion per week. Formerly 5A. This course is devoted to a study of selected literary texts set in various regions of Southeast Asia. The readings will include works by authors who are particularly relevant to students who are preparing for more advanced graduate studies in the language of emphasis. The primary emphasis is to be placed on building a broad-range of theoretical issues including power, gender, and spirituality. Readings will be designed by premier scholars such as Sir Thomas Stamford Raffles, Margaret Mead, Clifford Geertz, and Benedict Anderson will be examined. Discussions will cover a broad range of theoretical issues and topics in the study of religion. Also listed as Religious Studies C90B. (SP)

R5B. Under Western Eyes. (4) Three hours of lecture and one hour of discussion per week. Prerequisites: 5A or consent of instructor. In this course, the student will read selections from the large body of scholarly texts that have been written about Southeast Asia. Expository and argumentative essays by premier scholars such as Samuel Huntington, Stanford Raffles, Raffles, Margaret Mead, Clifford Geertz, and Benedict Anderson will be examined. Discussions will cover a broad range of theoretical issues including power, gender, and spirituality. This course satisfies the second half of the Reading and Composition requirement. (F,SP) Tiwon

R25. A Second Look: Introducing the Multilingual World. (4) Three units of seminar per week per unit for 15 weeks. One and one-half hours of seminar per week. Prerequisites: Consent of instructor. This course will be on the hermeneutic difficulties attendant in the study of religion. Also listed as Religious Studies C90B. (SP)

Upper Division Courses

C145. Buddhism in Contemporary Society. (4) Three hours of lecture per week. A study of the Buddhist tradition as it is found today in Asia. The course will begin with a focus on specific historical periods and themes. The course includes case studies such as the relationship between Buddhism and the state; Buddhist monasticism and its relationship to the laity; Buddhist ethics; Buddhist “modernism,” and so on. Also listed as Group in Buddhist Studies C126 and C128 and East Asian Languages and Cultures C128. (F,SP) Staff

149. Studies in South and Southeast Asian Languages. (2-4) Course may be repeated for credit as topic varies. Three hours of lecture per week. Directed to permit regular faculty and visitors to explore special topics not normally covered in the curriculum. Focus and readings will change in response to current research interests of instructors and teaching needs of the department. (F,SP) Staff

190. Seminar in South and Southeast Asian Studies. (3) Course may be repeated for credit as topic varies. Two to three hours of lecture per week. Designed primarily to give majors sustained and intensive training in reading, writing, and analysis in the discipline. Independent research and a substantial essay required.
To be eligible for admission for the honors basis. Four-unit limit per term. Tutorial instruction in areas not covered by regularly scheduled courses. Four-unit limit per term.

198A. South Asian Studies. (1-4) (F,SP)
198B. Tamil. (1-4) (F,SP)
198C. Hindi-Urdu. (1-4) (F,SP)
198D. Malay-Indonesian. (1-4) (F,SP)
198E. Southeast Asian Studies. (1-4) (F,SP)
198F. Sanskrit. (1-4) (F,SP)

199. Supervised Independent Study and Research. Course may be repeated for credit. Must be taken on a passed/not passed basis. Tutorial instruction in areas not covered by regularly scheduled courses. Four-unit limit per term. (F,SP)
199A. South Asian Studies. (1-4) (F,SP)
199B. Tamil. (1-4) (F,SP)
199C. Hindi-Urdu. (1-4) (F,SP)
199D. Malay-Indonesian. (1-4) (F,SP)
199E. Southeast Asian Studies. (1-4) (F,SP)
199F. Sanskrit. (1-4) (F,SP)

Graduate Courses

250. Seminar in South and Southeast Asian Studies. (4) Three hours of seminar and one hour of discussion per week. Prerequisites: Consent of instructor. Formerly South Asian 250. Topics vary from semester to semester. Staff
290. Special Studies. Course may be repeated for credit. Students may enroll in more than one section of 290, but the total number of units of Special Study in any one semester may not exceed 12. (F,SP)
290A. South Asian Studies. (1-5) (F,SP)
290B. Tamil. (1-5) (F,SP)
290C. Hindi-Urdu. (1-5) (F,SP)
290D. Malay-Indonesian. (1-5) (F,SP)
290E. Southeast Asian Studies. (1-5) (F,SP)
290F. Sanskrit. (1-5) (F,SP)

294. Methods in South and Southeast Asian Studies. (4) Course may be repeated for credit. Three hours of lecture and one hour of discussion per week. Formerly 294A. Introduction to the principal, historical, and contemporary methods for study of the literatures, languages, religions, cultures, and peoples of South and Southeast Asia. Discussion of the disciplinary formations of Orientalism, philology, anthropology, comparative religion, gender studies, and history. Topics and readings change year to year. Seminar work will culminate in a one-day student symposium. (F,SP) Staff

299. Dissertation Preparation and Related Research. Course may be repeated for credit. Must be taken on a satisfactory/unsatisfactory basis. Prerequisites: Advanced candidate with consent of thesis supervisor and graduate adviser. Normally reserved for students directly engaged in writing the doctoral dissertation. (F,SP)
299A, South Asian Studies. (1-12) (F,SP)
299B. Tamil. (1-12) (F,SP)
299C. Hindi-Urdu. (1-12) (F,SP)
299D. Malay-Indonesian. (1-12) (F,SP)
299E. Southeast Asian Studies. (1-12) (F,SP)
299F. Sanskrit. (1-12) (F,SP)

601. Individual Study for Masters Students. Course may be repeated for credit. Course does not satisfy unit or residence requirements for master’s degree. Must be taken on a satisfactory/unsatisfactory basis. Prerequisites: For candidates for Master’s degree. Individual study for the comprehensive or language requirements in consultation with the graduate adviser. (F,SP)
601A. South Asian Studies. (1-8) (F,SP)
601B. Tamil. (1-8) (F,SP)
601C. Hindi-Urdu. (1-8) (F,SP)
601D. Malay-Indonesian. (1-8) (F,SP)
601E. Southeast Asian Studies. (1-8) (F,SP)
601F. Sanskrit. (1-8) (F,SP)

602. Individual Study for Doctoral Students. Course may be repeated for credit. Course does not satisfy unit or residence requirements for doctoral degree. Must be taken on a satisfactory/unsatisfactory basis. Prerequisites: For candidates for doctoral degree. Individual study in consultation with the major field adviser, intended to provide for a range of graduate students to prepare themselves for the various examinations required for the Ph.D. (F,SP)
602A. South Asian Studies. (1-8) (F,SP)
602B. Tamil. (1-8) (F,SP)
602C. Hindi-Urdu. (1-8) (F,SP)
602D. Malay-Indonesian. (1-8) (F,SP)
602E. Southeast Asian Studies. (1-8) (F,SP)
602F. Sanskrit. (1-8) (F,SP)

Professional Courses

300. Methods and Problems in Teaching South and Southeast Asian Studies. (3) Course may be repeated for credit. Two hours of seminar per week plus individual conferences and pedagogical videotaping. Must be taken on a satisfactory/unsatisfactory basis. Prerequisites: Graduate standing or graduate student status. Team-taught by a faculty member and an advanced graduate student. This seminar will expose GSIs to methods and potential problems in teaching. Building a syllabus, grading, teaching writing and reading comprehension, fairness in the classroom, maintaining enthusiasm, developing a pedagogical teaching portfolio, and campus resources for special needs students will be covered. Seminar will include periodic videotaping and feedback within each student’s classroom. (F,SP)

South Asian

Lower Division Courses

R5A. Great Books of India. (4) Three hours of lecture and one hour of discussion per week. Formerly 54A. Reading and composition based on 10 classic works of Indian literature ranging from the ancient Sanskrit epics to modern Indian and Western authors. Weekly composition on texts and topics read and discussed in class. Satisfies the first half of the Reading and Composition requirement. (F) Staff

R5B. India in the Writer’s Eye. (4) Three hours of lecture and one hour of discussion per week. Formerly 58B. Reading and composition in connection with Eastem and Western representations of India, and other Asian cultures, in great works of modern literature. Satisfies the second half of the reading and composition requirement. (SP) Staff

Upper Division Courses

108. Psychology and Traditional India. (3) Three hours of lecture per week. Prerequisites: South Asian 1A, Psychology 1, or permission of instructor. Lectures and discussion of psychological and psychoanalytic approaches to some of the characteristic cultural and social aspects of ancient and traditional India. Readings in translation and important secondary works on the psychology of Indian culture, and related works from the psychoanalytic literature. (SP) R. P. Goldman

121. Classical Indian Literature in Translation. (4) Three hours of lecture and one hour of discussion per week. Literary works of ancient India are read in English translation and studied critically. The course aims at giving a comprehensive picture of many important areas of the Indian literary heritage. (F,SP)

C122. The Novel in India. (4) Three hours of lecture and one hour of discussion per week. Lectures and discussion on the novel as it arose on the Indian subcontinent during the 19th and 20th centuries, through East European and English works. Cross-references might be made to classic novels of related modern traditions on Indian themes. Critical discussion of the novel as a modern genre adapted to local conditions and coexisting with older traditions of writing. The novel as a window on Indian modernities. Interpretation of Indian society, culture, and history through literature. Also listed as Comparative Literature C159.

124. Modern Indian Literature. (4) Three hours of lecture and one hour of discussion per week. Lectures and discussion of 19th and 20th century Indian literature through English translations and original works in English. Interpretation of Indian society and culture through literature. Staff.

C127. Religion in Early India. (4) Three hours of lecture and discussion per week. Designed as a two-semester sequence, these courses are an introduction to the religions that have their origin on the Indian subcontinent—Hinduism, Buddhism, Jainism, Sikhism, and tribal religions—as well as those that originated in other regions such as Islam, Christianity, Judaism, and Zoroastrianism. Organizing this material chronologically rather than teaching it by separate religious traditions facilitates comparisons and promotes an understanding not only of the differences among these religions but also some of their commonalities in philosophy, theology, and praxis. Also listed as Religious Studies C161. (F,SP) Staff

C128. Religious Movements in Modern India. (4) Three hours of lecture and one hour of discussion per week. Prerequisites: 127 or Religious Studies 161 or consent of instructor. Formerly 128. Introduces history of religious movements in modern India. Examines the dissemination and reinterpretation of sacred texts and religious practices. Includes a reading of spiritual experience and religious authority at mid-century in an influential modern novel. Examines religious conversions, transformations of women's roles, and how the concept of a secular state in post-independence India shapes religious policy and practice. Also listed as Religious Studies C163. Staff

140. Hindu Mythology. (4) Three hours of lecture per week. Literary and religious aspects of Hindu myths. Reading of selected mythological texts in translation. (F,SP) Gonazales-Reimann

C140. Hindu Mythology. (4) Three hours of lecture per week. Formerly 140. Literary and religious aspects of Hindu myths. Reading of selected mythological texts in translation. Also listed as Religious Studies C165. (F,SP) Goldman

141. Religion in South India. (4) Three hours of lecture and one hour of discussion per week. The development and practice of religion in South India. Emphasis will be on sources translated directly from Indian languages. Subjects covered include: the in- digenous religion, the cult of Bhaktamara, bhakti movements, and the practice of Hinduism in modern South India. G. Hart
C142. India’s Great Epics: The Mahabharata and the Ramayana. (4) Three hours of lecture per week. Prerequisites: 5A, 127, 140, or consent of instructor. This course is based on the late Sanskrit epic poems—the Mahabharata and the Ramayana in translation, selected readings from the corpus of secondary literature on Indian epic studies as well as lectures on salient discussion. Emphasis will be placed on selected showings of popular cinematic and television versions of the epics. Also listed as Religious Studies C166. Goldman

144. Islam in South Asia. (4) Three hours of lecture and one hour of discussion per week. Prerequisites: Consent of instructor. The aim of this course on the religions of South Asia is to introduce students to the broad historical currents of the expansion of Islam in the Indian subcontinent, the nature of Muslim political authority, the interaction between religious communities, Islamic aesthetics and contributions to material culture, the varied engagements and reactions of Muslims to colonial rule, and the contemporary concerns of South Asia’s Muslims. While this is a lecture course, ample time will be set aside for discussion and the active engagement of participants will be expected. Lectures will be supplemented with visual material, music, and movies where possible. (F,SP) Staff

145. Dance and Dance-Drama of India. (4) Three hours of lecture and one hour of discussion per week. Prerequisites: 1A-1B or consent of instructor. An introduction to the diverse styles of Indian dance and their role in Indian cultural history. Lectures of the history and development of Indian dance and dance-drama and their importance in traditional, as well as modern, Indian society. The elements of dance, vocal and instrumental music, poetic and prose texts, mime, dialogue, costumes, make-up, and masks will be compared in major forms. Readings will be drawn from an extensive body of scholarship on the principal styles of dance. Students will have the opportunity to learn some of the musical rhythms and dance movements. C145, South Asia. (4) Students will receive no credit for C145 if they have already taken Anthropology 184. Three hours of lecture per week. Cultural traditions, social organization, and social change, with an emphasis on India and Pakistan. Also listed as Anthropology C184. (F,SP)

Graduate Courses

215A-215B. Readings in Indian Buddhist Texts. (2,4,2,4) Course may be repeated for credit. Three hours of lecture and one hour of discussion per week. Prerequisite: 215A is prerequisite to 215B. One year of Sanskrit and/or consent of instructor. This graduate seminar focuses on reading a wide spectrum of Indian Buddhist texts in the Sanskrit (or Pali) original or the English translation, to discuss general and different aspects of Indian Buddhism. The students taking the course for 2 units (rather than 4) will be expected to prepare thoroughly every week for the reading of Buddhist texts in the original. They will also be expected to read all related secondary literature that is assigned to supplement the study of the primary source material. In contrast to the students taking the course for 4 units, they will not be expected to write down any terms and glossaries for class. (F,SP) Staff

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B. Insular Southeast Asia: Covers the modern-day nations of Indonesia, Malaysia, and the Philippines. Special emphasis on the arts and their social and cultural context. Emphasis of the impact of the colonial experience and the question of modernization vs. tradition. (F,SP) Tiwon

Upper Division Courses

128. Introduction to Modern Indonesian and Malaysian Literature in Translation. (4) Three hours of lecture and one hour of discussion per week. This course will examine the role of contemporary literature in Indonesia and Malaysia. Emphasis will be placed on the socio-political aspects of this literature in historical context. Genres discussed will include poetry, the novel, the short story, and drama. Staff

129. Mainland Southeast Asian Literature. (4) Three hours of lecture per week. Prerequisites: Upper division standing and consent of instructor. Readings and lectures focus on Thailand, Vietnam, Burma, Cambodia, and Laotian materials as available. After brief attention to the influence of oral tradition, classical poetry, drama and their importance in traditional, as well as modern, Southeast Asian societies, we will discuss the role of contemporary literature, novels, short stories, film, and television in their cultural/historical context. (F,SP)

130. Articulations of the Female in Indonesia. (4) Three hours of lecture per week. This course examines the impact of the history of literacy and literature upon the life and work of women in Indonesia. Course material includes literature, oral and manuscript narratives, ritual performance. (F) Tiwon

137. Islam and Society in Southeast Asia. (4) Three hours of seminar/discussion/laboratory/field trips/videos per week. This undergraduate seminar will be an investigation into key discourses on Islam in Southeast Asia, focusing on history, literature, and culture. We will trace the processes through which Islam entered the Malay world in the 13th century, and explore the European colonial encounters with Islam in Southeast Asia and the ways that Islam interacted with and resisted colonialism through the lens of mysticism and of reformists and will also explore the struggle of Islam as a minority religion in the Philippines and Thailand. Readings will include primary sources in translation, literary texts, ethnographic works, and writings by colonial and local scholars. (F) Hadler

138. Southeast Asian Cultures, Texts, and Politics. (4) Four hours of seminar, two hours of lecture, and four hours of reading/writing per week. Prerequisites: Southeast Asian 10B or consent of instructor. This seminar will examine social and political periods in Southeast Asia. Through literary and political texts as well as classical anthropological sources, we will explore different approaches to reading and analyzing Southeast Asian source material. There will be extensive readings of works of fiction and primary source material in translation, as well as occasional screenings of films. We will tackle broader themes and theoretical approaches to Southeast Asian sources and literature and will discuss different approaches to reading modern Southeast Asian texts. The course is open to advanced undergraduates and graduate students. (F,SP) Hadler

141A. Southeast Asia to the 18th Century. (4) Three hours of lecture and one hour of discussion per week. The rise of the region’s most important classical and early modern states; long-term economic, social, and religious trends. Also listed as History C111A. (F,SP) Staff

141B. Modern Southeast Asia. (4) Three hours of lecture and one hour of discussion per week. Major themes in modern Southeast Asian history with an emphasis on cross-country comparisons involving the region’s largest and most populous countries: Thailand, Burma, Vietnam, Singapore, Indonesia, the Philippines. Also listed as History C111B. (F,SP) Staff

141C. Political and Cultural History of Vietnam. (4) Three hours of lecture and one hour of discussion per week. This course provides an introduction to the main issues in Vietnamese history from the mythic and archaeological origins of the modern nation-state to the end of the Second Indochina War in 1975. Special emphasis will be placed on “modern” developments from the late 18th century. In addition to history texts, readings will be taken from novels, short stories, poetry, and memoirs. Also listed as History C111C. (F,SP) Staff

C164. The Indonesian Connection: Dutch Literature About the Indies in English Translation. (4) Three hours of lecture and two and one-half hours of reading/laboratory session per week. In postcolonial thought on European claims to cultural supremacy, the case of the “Dutch East-Indies” (the future Indonesia) still arouses questions like: What made the Dutch colonial policy different from that of other European powers? What were the main characteristics of the “Dutch East-Indies”? How did a small country like the Netherlands manage to rule a territory that was five times its own size? How can we explain that 350 years of Dutch domination left so few traces in contemporary Indonesia? Also listed as Dutch C164. (F,SP) Staff

Bengali

Lower Division Courses

1A-1B. Introductory Bengali. (5;5) One and one-half hours of lecture and two and one-half hours of reading/writing per week. Prerequisites: 1A is prerequisite to 1B, or consent of instructor. Students will be expected to acquire knowledge of the basic grammar of Bengali, such that they learn to read simple graded texts and to speak at the “low intermediate” level by the end of the year. (F,SP)

Upper Division Courses

101A-101B. Intermediate Bengali. (5;5) Five hours of session per week. Prerequisites: 1B is prerequisite to 101A; 101A is prerequisite to 101B; or consent of instructor. Students are expected to be able to read, with the aid of a dictionary, modern Bengali literature, and speak at a “high-intermediate” level by the end of the year. There will be viewing of Bengali videos at a mutually agreed upon time and in class from time to time. (F,SP) Staff

Hindi-Urdu

Lower Division Courses

1A-1B. Introductory Hindi. (5;5) Five hours of lecture and one hour of laboratory per week. Hindi writing systems. Survey of grammar. Graded exercises and readings drawn from Hindi literature, leading to mastery of basic structure and essential vocabulary and achievement of basic reading and writing competence. (F,SP) Jain

2A-2B. Introductory Urdu. (5;5) Five hours of lecture and one hour of laboratory per week. The course concentrates on developing skills in reading, writing, speaking, and aural comprehension. Evaluation is based on attendance, written homework assignments, quizzes, dictations, and examinations. Conventional teaching materials may be supplemented by popular songs and clips from contemporary Indian cinema. (F,SP) Staff

Upper Division Courses

100A-100B. Intermediate Hindi. (3;3) Three hours of lecture and laboratory work/vis/uals per week. Prerequisites: 1A-1B. This course acquaints students with representative readings from Hindi texts on pivotal cultural issues from a wide variety of sources, to enable the students to acquire cultural competence in the language. Systematic training in advanced grammar and syntax, reinforced by exercises in composition, both oral and written. Special attention to developing communication skills. (F,SP) Jain

101A-101B. Readings in Modern Hindi. (3;3) Three hours of lecture per week. Prerequisites: Two years of Hindi or consent of instructor. This course introduces students to a variety of contemporary literary styles.
Weekly readings and discussions of short stories, poems, and dramatic sketches from representative authors. Short written assignments on themes suggested by the readings required. Special attention to matters of style and idiom. 101B is devoted to viewing films based on well-known literary texts, such as those of Premchand, and also to reading scripts and oral and written exercises. Students will acquire language skills sufficient to approach literary texts on their own. Jain

Upper Division Courses

211. Hindi Literature. (4) Course may be repeated for credit. Three hours of lecture and one hour of discussion per week. Prerequisites: Two years of Hindi or equivalent. The course will focus on readings in modern Hindi fiction, drama and critical essays, occasionally also on the medieval devotional literature in Hindi. Topics will vary from year to year. Students will be expected to write a 20-25 page research paper. Dalmia

Khmer

Lower Division Courses

1A. Introductory Khmer. (5) Five hours of lecture and one hour of laboratory per week. Modern Khmer (Cambodian) is an important Austroasiatic language that is spoken by millions of people in Cambodia and across mainland Southeast Asia from Vietnam to India and Burma to Malaysia. Khmer 1A provides students with a thorough command of the basic structures of standard spoken Cambodian and provides a competence in reading elementary texts. Lessons include dialogues, drills, and grammar and are supplemented by language correlative tapes that are key to effective learning. Once the students have mastered the sound system, the Khmer writing system is introduced. The texts are graded readings linked to the topics, vocabulary, and structures that have already been covered in the lessons on spoken Cambodian. (F,SP) Staff

1B. Introductory Khmer. (5) Five hours of lecture and one hour of laboratory per week. Prerequisites: 1A or equivalent. Modern Khmer (Cambodian) is an important Austroasiatic language that is spoken by millions of people in Cambodia and across mainland Southeast Asia from Vietnam to India and Burma to Malaysia. A continuation of Khmer 1A focused on building foundations in spoken Cambodian, developing mastery of the Khmer writing system, and establishing competence in reading elementary texts. Includes more advanced studies of grammar and readings in short literary works. Continued study of the texts used in Khmer 1A. (F,SP) Staff

Upper Division Courses

100A-100B. Intermediate Khmer. (5;5) Five hours of lecture per week. Prerequisites: 1A-1B or equivalent; completion of Intermediate Cambodian. This course will increase student fluency in reading a variety of texts and enhance the student’s ability to converse in the standard dialect of the language, which is spoken by educated Cambodians. Selected readings in Khmer will advance the student's understanding of Cambodian culture, history, literature, social, and political-institutional contexts. The language of contemporary journalism will also be considered. Conversation exercises are designed to provide students with a familiarity of the vocabulary, set and usages that are appropriate for various social settings, such as interaction with Buddhist clergy and conversation between speakers of relatively higher and lower social rank. Sanskrit and Pali influences on Khmer are studied. The language of Old Khmer is considered. Dialect variation in modern Khmer is considered and special attention is paid to the spoken and written jargons that are associated with various recent regimes and ideological contexts. (F,SP) Staff

101A-101B. Readings in Traditional Khmer Texts. (3;3) Three hours of lecture and one hour of discussion per week. Prerequisites: Two years of Khmer or consent of instructor: This course is designed to introduce students to traditional Khmer literary texts composed between the 16th to early 20th centuries. The first semester will open with a general introduction to Khmer literary history and classical verse forms. The remainder of the semester will be devoted to reading the Reamker, the classical Khmer version of the Ramayana (16th-17th centuries). In the second semester we will read from c tcpad (didactic texts) and verse novels based on Buddhist jataka tales or oral legend. Students will be expected to analyze literary and grammatical forms and expand their vocabularies. (F,SP) Thompson

Malay/Indonesian

Lower Division Courses

1A-1B. Introductory Indonesian. (5;5) Five hours of lecture and one hour of laboratory per week. Survey of grammar, graded exercises, and readings drawn from Indonesian texts, leading to a mastery of basic language patterns, essential vocabulary, and to achievement of basic reading, writing, and conversational competence. Emphasis on developing communicative skills. (F,SP) Lunde

Upper Division Courses

100A-100B. Intermediate Indonesian. (5;5) Five hours of lecture and one hour of laboratory per week. Prerequisites: 1A-1B. Readings in Indonesian texts, including newspapers, journals, and literature exploring a variety of styles. Systematic study of grammatical and idiomatic patterns, based on reading and dictation. Additional practice in composition, oral and written communication skills, and cultural competence. (F,SP) Lunde

Graduate Courses

210A-210B. Seminar in Malay Letters and Oral Traditions. (4;4) Course may be repeated for credit with consent of instructor. Three hours of seminar and one hour of discussion per week. Prerequisites: 200A or equivalent. Formerly 201A and 201B. Advanced readings in Indonesian literature, including Sanskrit omate poetry with emphasis on the canons of poetic analysis of the Indian aesthetic tradition. (F,SP) R.P. Goldman

207. Sanskrit Philosophical Texts. (4) Course may be repeated for credit. Three hours of seminar and one hour of discussion per week. Prerequisites: Two years of Sanskrit or equivalent. Reading of a Sanskrit philosophical, logical, or grammatical text, with attention to philosophical, logical, or grammatical features. Text to be chosen in consultation with students. Staff

Tagalog

Lower Division Courses

1A-1B. Introductory Tagalog. (5;5) Five hours of lecture and one to two hours of discussion per week. Prerequisites: 1A or equivalent or consent of instructor. Formerly Tagalog 1A. A systematic introduction to the grammar, sentence patterns, and essential vocabulary of modern standard Tagalog. Emphasis is placed on extensive practice in idiomatic Tagalog conversation, with additional practice in reading and writing Tagalog. (F,SP) Staff

Upper Division Courses

100A-100B. Intermediate Tagalog. (5;5) Five hours of lecture and one to two hours of discussion per week. Prerequisites: 1A-1B, or consent of instructor. Formerly Tagalog 100A. The goal of this course is to enable students to increase their proficiency in Tagalog to at least the intermediate-high level of the national ACTFL Proficiency Guidelines. While speaking and listening comprehension will be stressed, training in reading and writing Tagalog will be an integral part of instruction. Films and video/audio materials will supplement written texts. (F,SP) Staff

Punjabi

Lower Division Courses

1A-1B. Introductory Punjabi. (5;5) Three hours of lecture and two hours of laboratory per week. Prerequisites: 1A is prerequisite to 1B. Graded exercises, leading to a mastery of basic language patterns, essential vocabulary, and achievement of basic reading and writing skills. (F,SP) Ubhi, Upkar

Upper Division Courses

100A-100B. Intermediate Punjabi. (5;5) Three hours of lecture and two hours of laboratory per week. Prerequisites: 1B is prerequisite to 100A: 100A is prerequisite to 100B. Readings in Punjabi texts exploring a variety of issues. Emphasis on developing written communicative skills and cultural competence. Systematic study of grammatical and lexical problems arising from readings. (F,SP) Ubhi, Upkar

Sanskrit

100A-100B. Elementary Sanskrit. (5;5) Five hours of lecture and one hour of laboratory per week. Elements of Sanskrit grammar and practice in reading Sanskrit texts. (F,SP) S. Goldman

101A-101B. Intermediate Sanskrit. (5;5) Four and one-half hours of lecture per week. Prerequisites: 100B. Readings from the Sanskrit epics and puranas; introduction to the kavya style of classical Sanskrit poetry; readings in the vastras. (F,SP) S. Goldman

Graduate Courses

200A-200B. Sanskrit Literature. (4;4) Course may be repeated for credit. Three hours of lecture and one hour of discussion per week. Prerequisites: 101B or equivalent. Formerly 200, 201 and 202. Advanced readings in Sanskrit literature, including Sanskrit omate poetry with emphasis on the canons of poetic analysis of the Indian aesthetic tradition. (F,SP) R.P. Goldman

207. Sanskrit Philosophical Texts. (4) Course may be repeated for credit. Three hours of seminar and one hour of discussion per week. Prerequisites: Two years of Sanskrit or equivalent. Reading of a Sanskrit philosophical, logical, or grammatical text, with attention to philosophical, logical, or grammatical features. Text to be chosen in consultation with students. Staff

Tamil

Lower Division Courses

1A-1B. Introductory Tamil. (5;5) Five hours of lecture per week. The grammar of modern Tamil will be covered followed by readings in simple texts. Practice will also be given in spoken Tamil. (F,SP) K. Hart
### Upper Division Courses

100B. Intermediate Tamil. (3-5) Students who complete the lab work/speaking practice will receive five units; students who do not will receive three units. Three hours of lecture and one and one-half hours of laboratory per week. Prerequisites: 1B. Readings from modern Tamil fiction; practice in speaking and composition; consideration of advanced topics in grammar. (F,SP) K. Hart

101A-101B. Readings in Tamil. (4,4) Three hours of lecture and one hour of discussion per week. Prerequisites: One year of Tamil or consent of instructor. These courses introduce students to a variety of literary styles. 101A will consist of weekly readings and discussions of short stories, poems, and dramatic sketches from representative authors. Short written assignments on themes suggested by the readings are required. Special attention is paid to matters of style and idiom. 101B is devoted to viewing films based on a variety of themes (social, village, mythological, classical Tamil) and to reading scripts and oral written exercises. Students will acquire language skills sufficient to approach literary texts on their own. (F,SP) K. Hart

### Graduate Courses

210A-210B. Seminar in Tamil Literature. (4,4) Course may be repeated for credit with consent of instructor. Three hours of seminar and one hour of discussion per week. Prerequisites: 100B. Readings in advanced Tamil. Texts to be determined by the needs of the student. (F,SP) G. Hart

### Thai

#### Lower Division Courses

1A. Introduction to Thai. (5) Five hours of lecture per week. Introduction to reading, writing, and speaking Thai. Open to anyone who does not know how to read Thai. (Non-reading Thai speakers may take 1A.) Materials include a reader and Thai films with English subtitles. (F,SP)

1B. Introduction to Thai. (5) Five hours of lecture per week. Prerequisites: 1A. Continuation of 1A. Students who speak Thai and have a limited reading ability may be eligible for this course with the consent of the instructor. Materials include a textbook, supplemental materials, and Thai films. (F,SP)

#### Upper Division Courses

100A. Intermediate Thai. (5) Five hours of lecture per week. Prerequisites: 1B or consent of instructor for students who have not passed 1B. Students must be able to speak, read, and write Thai at an elementary level. Materials include textbook, supplemental materials, and short essays in Thai. (F,SP)

100B. Intermediate Thai. (5) Five hours of lecture per week. Prerequisites: 100A or consent of instructor for students who have not passed 100A. Materials include textbook, supplemental materials, short essays, and short fiction in Thai. (F,SP)

101A-101B. Advanced Thai. (3-3) Three hours of lecture per week. Prerequisites: 102A. This third-year Thai course will focus on literature written between 1855 and 1955. Readings will be in Thai, with supporting essays in English, providing social/political context. Emphasizes on evolution of modern Thai society, overthrow of the absolute monarchy in 1932, development of literatures of social preservation and of social consciousness. Thai readings consist of short stories, novel excerpts, correspondence. (F,SP) Kepner

### Vietnamese

#### Lower Division Courses

1A-1B. Introductory Vietnamese. (5,5) Five hours of lecture and one to two hours of discussion per week. Prerequisites: 1A or consent of instructor. 1A is a prerequisite for 1B. Formerly Vietnamese 1A. An introduction to modern spoken and written Vietnamese, including intensive drill on basic phonology and grammar. By the end of the second semester, the student should be able to function successfully in ordinary Vietnamese conversation and read simple texts of moderate difficulty. (F,SP) Staff

#### Upper Division Courses

100A-100B. Intermediate Vietnamese. (5,5) Five hours of lecture and one to two hours of discussion per week. Prerequisites: 1A-1B, or consent of instructor. 100A or consent of instructor is a prerequisite for 100B. Formerly Vietnamese 100A. A second-year course in Vietnamese vocabulary and syntax with intensive drills on short colloquial expressions and auditory recognition of speech patterns. First semester course stresses phraseology, sentence building, rules of composition and development of students' communicative skills. By the end of the second semester, students will learn to speak and write simple compositions and will have a cursory introduction to Vietnamese literature and sample readings from contemporary Vietnamese writers. (F,SP) Staff

101A. Advanced Vietnamese. (3) Course may be repeated for credit with consent of instructor. Three hours of lecture per week. Prerequisites: 101B or equivalent. This course is designed for students who have already achieved an intermediate degree of proficiency in speaking, reading, and writing modern Vietnamese. Objective: to move students toward a greater level of fluency in each of these key areas and provide an introduction to the literature and culture of Vietnam by reading Vietnamese language texts. Readings will vary from semester to semester and will include novels, short stories, poetry, and essays from the classical, colonial, post-colonial, and contemporary periods. Topics to be addressed in class are the nature of the Sino-Vietnamese classical tradition; cultural legacies of French colonialism; the regional character of literary and cultural production; the emergence of a distinctive Vietnamese modernity, and the history of Vietnamese gender norms and relations. Regular attendance and participation in classroom activities is mandatory and no English will be spoken in class. (F,SP) Staff

101B. Advanced Vietnamese. (3) Course may be repeated for credit with consent of instructor. Three hours of lecture per week. Prerequisites: 101A or equivalent. A continuation of 101A, with the goal of conversational fluency, advanced reading competence, and facility in writing. This course also provides an introduction to the literature and culture of Vietnam through a close reading of Vietnamese language texts. Readings will vary from semester to semester and will include novels, short stories, poetry, and essays from the classical, colonial, and contemporary periods. Among the topics to be addressed in class are the nature of the Sino-Vietnamese classical tradition, the cultural legacies of French colonialism, the regional character of literary and cultural production, the emergence of a distinctive Vietnamese modernity, and the history of Vietnamese gender norms and relations. Regular attendance and participation in classroom activities is mandatory and no English will be spoken in class. (F,SP) Staff

### Spanish and Portuguese

#### Spanish and Portuguese (College of Letters and Science)

Department Office: 5319 Dwinelle Hall, (510) 642-0471 spanish-portuguese.berkeley.edu

Chair: José Rabasa, Ph.D.

Professors

Julio M. Azvedo, Ph.D. Cornell University. Hispanic linguistics, applied linguistics

Emile L. Bergmann, Ph.D. Johns Hopkins University. Spanish Golden Age literature

Anthony J. Cascardi, Ph.D. Harvard University. Spanish Golden Age literature, literature and theater

Dru Dougherty, Ph.D. Harvard University. Modern Spanish literature and theater

Charles B. Faulhaber, Ph.D. Yale University. Medieval Spanish literature

Francine R. Masiello, Ph.D. University of Michigan, Spanish American literature

José Rabasa (Chair), Ph.D. University of California, Santa Cruz. Latin American Studies, colonial and postcolonial studies

Julio Ramos, Ph.D. Princeton University. 19th- and 20th-century Spanish American literature

Candace Slater, Ph.D. Stanford University. Brazilian literature, Hispanic folk traditions

Arthur L. Askins, Ph.D. San Francisco State University

Jerry R. Caddick, Ph.D. (Emeritus)

Louis A. Morilis, Ph.D. (Emeritus)

John H. R. Poll, Ph.D. (Emeritus)

Professors

Michael Iarocci, Ph.D. University of Pennsylvania. 18th- and 19th-century Spanish literature and culture

Ignacio E. Navarrete, Ph.D. Indiana University. 16th-century poetry and literary theory

Jose Luis Passos, Ph.D. University of California, Los Angeles. Brazilian literature, cinema, social thought

Richard Rosa, Ph.D. Harvard University. 19th- and 20th-century Latin American literature and cultures

Estelle C. Tarica, Ph.D., M.A. Cornell University. 20th-century Latin American literature and culture

Jesus Rodríguez Velasco, Ph.D. Universidad de Salamanca. Spanish medieval literature, literary theory

Assistant Professors

Natalia Brizuela, Ph.D. New York University. 19th- and 20th-century Latin American literature

Ana Maria Martinho, Ph.D. Universidade de Nova Lisboa. Luso-African literature

Lecturers

Ana Ameal-Guerra, A.B.D. State University of New York, Albany. A.B.D. Universidad de Vigo, Spain. Associate Director, lower division Spanish language program

Carla Donovan, M.A. San Francisco State University. Director, Portuguese language program

Céline Villalta, Ph.D. New York University. Director, lower division Spanish language program

### Department Overview

The sequence of undergraduate and graduate programs of the Department of Spanish and Portuguese is designed to lead from the acquisition of competence in written and spoken Spanish or Portuguese, through an acquaintance with the structure and history of one or both of these languages and a critical understanding of the development and achievements of their literatures in the Old World and in the New, to training in advanced study and independent research. The department’s policy is to maintain a balanced strength between language and literature and between Iberian and Latin American facets of a unified field.

### The Major

**Option A: Spanish and Spanish American**

**Lower Division.** Courses 1, 2, 3, 4, and 25 (or their equivalents). Students transferring from other institutions with advanced standing and intending to major in Spanish must present evidence (by examination or otherwise) that their preparation includes the equivalent of Spanish 25.

**Upper Division.** A minimum of 10 upper division courses totaling at least 30 units in the department, including Spanish 102A and 135W; two courses...
in Spanish literature, one in Medieval or Golden Age and one in Modern; two courses in Spanish-American literature; one course in Spanish linguistics or theoretical approaches to literature; three upper division elective courses in Catalan, Portuguese, or Spanish (but excluding Catalan 101, Portuguese 101A-101B, Portuguese 102, and Spanish 142, 147, and 197). In addition, students are required to complete two courses (upper or lower division) from outside the department, specifically related to the major.

**Option B: Luso-Brazilian**

**Lower Division.** Portuguese 11 and 12 or Portuguese 101 and 102 (or their equivalents). Students transferring from other institutions with advanced standing and intending to enroll in the program must present evidence (by examination or otherwise) that their preparation includes the equivalents of Portuguese 11 and 12 or Portuguese 101 and 102.

**Upper Division.** A minimum of 10 upper division courses totaling at least 30 units in the department, including Portuguese 103; Portuguese 104 and one other course in Brazilian literature; Portuguese 107A or 107B and one other course in Portuguese literature; one course in Portuguese linguistics or theoretical approaches to literature; and four upper division electives from the offerings of the department, two of which may be in a related field of Spanish or Spanish-American literature, linguistics, or culture. In addition, students are required to complete two courses (upper or lower division) from outside the department, specifically related to the major.

**Option C: Iberian or Latin-American**

**Lower Division.** Spanish 1, 2, 3, 4, and 25 (or their equivalents). Students transferring from other institutions with advanced standing and intending to enroll in the program must present evidence (by examination or otherwise) that their preparation includes the equivalent of Spanish 25.

**Plan 1: Iberian**

**Upper Division.** A minimum of 10 upper division courses totaling at least 30 units in the department, including Spanish 102A and 135W; Catalan 101 or Portuguese 101 and 102; one course from the literature of Spain, and one course from the literatures of Portugal or Catalonia; five other courses in Spanish, Portuguese, or Catalan language, literature, linguistics, or culture, from the offerings of the department. In addition, students are required to complete two courses (upper or lower division) from outside the department, specifically related to the major.

**Plan 2: Latin American**

**Upper Division.** A minimum of 10 upper division courses totaling at least 30 units in the department, including Spanish 102A and 135W; Portuguese 101; one course from the literature of Spain, and one course from the literatures of Portugal or Catalonia; five other courses in Spanish, Portuguese, or Catalan language, literature, linguistics, or culture, from the offerings of the department. In addition, students are required to complete two courses (upper or lower division) from outside the department, specifically related to the major.

If the student from previous training has the equivalent of Portuguese 101, Portuguese 102, or Catalan 101, any or all of these courses may be excused and replaced by further electives as appropriate.

**Option D: Hispanic Languages and Bilingual Issues**

**Lower Division.** Spanish 1, 2, 3, 4, and 25 (or their equivalents). Students transferring from other institutions with advanced standing and intending to enroll in the program must present evidence (by examination or otherwise) that their preparation includes the equivalent of Spanish 25.

**Upper Division.** A minimum of 9 upper division courses totaling at least 27 units, of which at least 21 upper division units must be taken in the department. Cross-listed courses count only once toward the major. In addition, students are required to complete one course (upper or lower division) from outside the department, specifically related to the major. Department courses must include the following distribution:

1. **Core languages courses:** 102A and 135W (6 units).
2. **Core linguistics courses:** Spanish 100 (3 units); one course in Spanish linguistics that includes discussion of aspects of Spanish/English contrastive linguistics, including but not limited to problems of interlanguage equivalencies and translation (3 units); one course in Spanish linguistics such as Spanish 164, Dialectology, or equivalent, dealing with language variation (3 units).
3. **Core literature/culture courses:** One course in Latin-American literature (3 units); one course in Latin-American literature/culture or Peninsular literature/culture (3 units); or Spanish 165, Coexistence and Conflict: Amerindian, English, and Spanish in the Southwest (3 units).

Courses taken outside the department must be approved by the departmental advisor for enrollment. These courses must have the following distribution (list offered as an example of possible course combinations; a more complete list is available from the department): 1) One upper division course dealing with linguistic issues, such as Psycholinguistics or Education 141 (3 units); 2) One upper division course in U.S. Hispanic literature/culture, such as Chicano Studies 150 or 170 or 172; and 3) One course, lower or upper division, specifically related to the major. This course may be taken on a passed/not passed basis.

**Honors Program**

To be admitted to the honors program in Options A, B, C, or D, students must have completed at least two semesters of work at Berkeley with an overall grade-point average of at least 3.3 and a grade-point average of at least 3.6 in courses in the major. Students must also have the approval of the major advisor in consultation with other members of the department.

Students admitted to the honors program must complete, preferably before, but not later than, the middle of the senior year, seven core courses, including Spanish 102A or 135W and seven upper division courses for either option A, B, C, or D or give evidence, by special examination, of equivalent preparation. Students passing an examination in lieu of one of the required courses will be deemed to have satisfied the corresponding requirement for the major, though without obtaining unit credit.

Students in the honors program must complete the special honors courses H195A-H195B, which are offered each semester. These courses consist of independent study, a written research thesis over the course of two semesters under the direction of an appropriate member of the department.

**The Minor**

**General Requirements:** 1) Courses must be completed on a letter-grade basis; 2) A minimum GPA of 2.0 in the courses of the minor; 3) A minimum of three of the courses to be completed at Berkeley; 4) No more than one of the courses may also be counted toward a major program of another department or group; and 5) Courses in English translation and Spanish 197 may not be offered in satisfaction of the elective portions of the minor programs.

**The Minor in Spanish Language and Literatures**

**Prerequisites:** Spanish 1, 2, 3, 4, and 25 (or their equivalents). **Requirements:** Five upper division courses in Spanish/Spanish American language, linguistics, literature, or culture, selected from the offerings of the department.

**Minor in Spanish Linguistics**

**Prerequisites:** Spanish 1, 2, 3, 4, and 25 (or their equivalents). **Requirements:** Spanish 100 (Introduction to Spanish Linguistics) and four other upper division Spanish linguistics classes, from among Spanish 161, 162, 163, 164, 165AC, 166, and 179.

**Minor in Luso-Brazilian Language and Literatures**

**Prerequisites:** Portuguese 11 and 12 or 101 and 102 (or their equivalents). **Requirements:** Five upper division courses in Portuguese/Brazilian language, linguistics, literature, or culture, selected from the offerings of the department (excluding the prerequisites of Portuguese 101 and 102).

**Procedures:** No formal declaration of enrollment in the minor program is required. Upon completion of the program, however, students must file with the undergraduate assistant of the department the Petition for Confirmation of Minor Program Completed, validated by the departmental advisor for the minor program. Students interested in either of the options should, therefore, work closely with the departmental advisor for the minor program to assure proper fulfillment of the requirements.

**Recommended for all programs:** Further study in Latin, and in Western European, Semitic, and Latin American history, languages, and literatures.

**Latin American Studies.** For the group major in Latin American Studies, see Latin American Studies in the Index.

**Graduate Program**

**Preparation for Graduate Study**

The M.A. degree program in Spanish Languages and Literatures requires a reading knowledge of another foreign language pertinent to Hispanic scholarship; the Ph.D. degree program in Romance Languages and Literatures requires a reading knowledge of Latin, French, and Italian, besides Spanish; and the Ph.D. degree program in Hispanic Languages and Literatures requires a reading knowledge of two foreign languages pertinent to the student’s specialization.

**The M.A. Program**

The Department of Spanish and Portuguese has two tracks within the M.A. program in Hispanic Languages and Literatures: 1) Spanish and Spanish-American Literature, and 2) Luso-Brazilian Studies.

1. **The requirements for an M.A. degree in Hispanic Languages and Literatures, emphasis in Spanish and Spanish-American Literature, are an A.B. degree with studies in Spanish equivalent to the undergraduate major in Spanish (Option A) at Berkeley; a reading knowledge of another foreign language; eight courses of postbaccalaureate work in the Department of Spanish and Portuguese at Berkeley, of which at least six must be in strictly graduate-level (200 series) courses, including one course in historical or descriptive linguistics; and the passing of a comprehensive written and oral examination. The examination covers all periods and genres of Spanish and Spanish-American literature as well as the linguistic structure of Spanish.

2. **The requirements for the emphasis in Luso-Brazilian studies are an A.B. degree in Portuguese, Spanish and Portuguese, or another field with demonstrable bearing on Luso-Brazilian studies. A
working knowledge of Spanish is highly recommended. Admission to Plan I (coursework and theses) is contingent upon approval of the students’ theses by their assigned advisory committee. A minimum of 21 units in coursework is required, including 12 units (four courses) in graduate (200 series) courses in the Department of Spanish and Portuguese, of which must be in linguistics/theory, and a minimum of three courses in Portuguese. For Plan II (coursework and a comprehensive examination), a minimum of 24 units in coursework is required, with 12 units (four courses) in the Department of Spanish and Portuguese. One of which must be in linguistics/theory; one graduate seminar in Spanish or Spanish-American literature or culture and a minimum of three courses in Portuguese, and the passing of a comprehensive written and oral examination covering the candidates’ programs as established by their assigned advisory committee.

The Ph.D. Programs

The Department of Spanish and Portuguese administers two doctoral programs.

I. The Program in Romance Languages and Literatures (with emphasis in Spanish). This program requires for admission an A.B. degree with a major in Romance philology, with emphasis on Spanish, as well as further knowledge of a second Romance literature as a collateral, and of prescribed masterpieces in the third.

2. Plan II requires a detailed knowledge of Spanish and Spanish-American literature and familiarity with Romance philology, with emphasis on Spanish, as well as further knowledge of a second Romance literature as a collateral, and of prescribed masterpieces in the third.

3. Plan III requires an in-depth knowledge of the structure and history (internal and external) of Spanish, and either the history of structure of French or Italian.

II. The Program in Hispanic Languages and Literatures. Prerequisites for admission are the following: a) an A.B. degree with a major in Spanish equivalent to the undergraduate major at Berkeley (Option A) or, for Plan III (see below), in linguistics with expertise in Spanish. No specific courses are required, but students who have a graduate level in linguistics, will lay out a program designed to prepare them for the qualifying examination preceding advancement to candidacy. As early as possible, they must demonstrate a reading knowledge of Latin, Italian, and French, by a written examination in one of these languages, and by either written examination or appropriate coursework in the others. A reading knowledge of Greek is recommended. The precise nature of the qualifying examination will depend on the students’ specific choice of plan from among the three program options:

1. Plan I requires a detailed knowledge of Spanish and Spanish-American literature and familiarity with Romance philology, with emphasis on Spanish, as well as further knowledge of a second Romance literature as a collateral, and of prescribed masterpieces in the third.

2. Plan II requires a detailed knowledge of Spanish and Spanish-American literature and familiarity with Romance philology, with emphasis on Spanish, as well as further knowledge of a second Romance literature as a collateral, and of prescribed masterpieces in the third.

3. Plan III requires an in-depth knowledge of the structure and history (internal and external) of Spanish, and either the history of structure of French or Italian.

Spanish

Lower Division Courses

1. Elementary Spanish. (5) Five hours of recitation and one and one-half hours of laboratory per week. Requires: Consent of instructor. Formerly 71. An intermediate course for students whose native language is Spanish. (F,SP) Staff

24. Freshman Seminars. (1) Course may be repeated for credit as topic varies. One hour of seminar per week. Prerequisites: 2. To be graded on a letter-grade basis. Sections 3-4 may be graded on a passed/not passed basis. The Berkeley Seminar Program has been designed to provide new students with the opportunity to engage in intellectual tax in a small seminar setting. Berkeley Seminars are offered in all campus departments, and topics vary from department to department and semester to semester.

25. Reading and Analysis of Literary Texts. (3) Three hours of lecture per week. Prerequisites: 4 or equivalents and reading knowledge of Spanish. Lower-division courses in the major. Topics vary from semester to semester. Berkeley Seminars are open to all the University faculty and students.

Spanish...

B prefix=language course for business majors
C prefix=cross-listed course
H prefix=honors course
R prefix=course satisfies R&C requirement
AC suffix=course satisfies American Cultures requirement
*Professor of the Graduate School
†Recipient of Distinguished Teaching Award

20. Intermediate Spanish Workshop. (10) Ten hours of lecture and three hours of laboratory per week. A prerequisite that is the equivalent of Spanish 1 and 2. (F,SP) Staff

20. Intermediate Spanish Workshop. (10) Ten hours of lecture and three hours of laboratory per week. Prerequisites: 2. An intermediate intensive course that is the equivalent of 3 and 4. (F,SP) Staff

21. Spanish for Bilingual Students, First Course. (3) Three hours of lecture and one hour of laboratory per week. Prerequisites: Consent of instructor. Formerly 70. An elementary course for students whose native language is Spanish. (F,SP) Staff

22. Spanish for Bilingual Students, Second Course. (3) Three hours of lecture and one hour of laboratory per week. Prerequisites: Consent of instructor. Formerly 71. An intermediate course for students whose native language is Spanish. (F,SP) Staff

98. Directed Group Study. (1-4) Course may be repeated for credit. Enrollment is restricted; see the Introduction to Courses and Curricula section of this catalog. One to four hours of group study per week. Must be taken on a passed/not passed basis. Prerequisites: Consent of instructor. Group study of a topic not included in the regular department curriculum. Topics may be initiated by students under the sponsorship of a member of the Spanish and Portuguese department’s faculty.

Upper Division Courses

Unless otherwise indicated, Spanish 25 or its equivalent is prerequisite to all upper division courses.

100. Introduction to Spanish Linguistics. (3) Three hours of lecture per week. Prerequisite: Spanish 25, proficiency in Spanish. Overview of contemporary Spanish Linguistics. It surveys areas such as the History of Spanish; the grabbing of the Language Sciences; the Spanish sound system; the form and function of words; syntactic structures; geographical, social and contextual varieties (dialectal varieties, regionalism, bilingualism, and burrowing question in contemporary Linguistics: Spanish in the U.S.)

102A. Advanced Grammar and Composition. (3) Three hours of lecture per week. Prerequisites: 25 or equivalent. (F,SP)

102B. Advanced Grammar and Composition. (3) Students will not receive credit for 102B after taking 102C. Credit in 102C cannot be removed by completion of 102B. Three hours of lecture per week. Prerequisites: 25 or equivalent. (F,SP)

102C. Creative Writing in Spanish. (3) Three hours of seminar per week. Prerequisites: 102A with a grade of A- or better. This course will be structured as a fiction writing workshop. The students will write short stories. It will have three main components: writing short stories outside of class; short and varied creative writing exercises, done both in and out of class;
and c) reading and discussion of critical texts on creative writing as well as selected short stories used as examples of different narrative techniques.

104A. Survey of Spanish American Literature. (3) Three hours of lecture per week. Prerequisites: 25 or equivalent. Beginnings to 1880. (F)

104B. Survey of Spanish American Literature. (3) Three hours of lecture per week. Prerequisites: 25 or equivalent. Beginnings to 1880. (SP)

107A. Survey of Spanish Literature. (3) Three hours of lecture per week. Prerequisites: 25 or equivalent. Beginnings to 1870. (F)

107B. Survey of Spanish Literature. (3) Three hours of lecture per week. Prerequisites: 25 or equivalent. Beginnings to 1700. (SP)

109. Spanish Drama of the 16th and 17th Centuries. (3) Three hours of lecture per week. Prerequisites: 25 or equivalent. An overview of the culture of Spain, through emphasis on selected topics.

110. Studies in Spanish Culture. (3) Three hours of lecture per week. Prerequisites: 25 or equivalent. An analysis of the cultural phenomena of Spain, through emphasis on selected topics.

111A-111B. Cervantes. (3) Three hours of lectures per week. Prerequisites: 25 or consent of instructor. Analysis and discussion of selected works by Cervantes, including his dramatic output. (F,SP)

112. Studies in Spanish Culture. (3) Three hours of lecture per week. Prerequisites: 25 or equivalent. An overview of the culture of Spain, through emphasis on selected topics.

113. Topics in Latin American Culture. (3) Course may be repeated for credit as topic varies. Three hours of lecture per week. Prerequisites: 25 or equivalent. The purpose of this course is to explore the roots of Latin American Cultures, the region’s search for identity, and some of the main problems it faces today. We will study great social movements, like the Mexican and Cuban revolutions, and analyze their causes and consequences and, especially, their expression in art (e.g. the muralist movement in Mexico, the “corridos” and the narrative of the Mexican revolution, etc.).

114. The Contemporary Spanish American Novel. (3) Three hours of lecture per week. Prerequisites: 25 or equivalent. (F,SP)

115. Spanish Poetry. (3) Three hours of lecture per week. Prerequisites: 25. A study of four to seven representative Spanish lyric poets from the Renaissance to the 20th century. The course emphasizes language as a medium and aims to develop students’ familiarity with poetic techniques and with the continuities in the Spanish poetic tradition. Optional translation project. (F,SP)

116. Colonial/Postcolonial Studies. (3) Three hours of lecture per week. Prerequisites: 25. This course juxtaposes verbal and visual colonial texts with key essays in postcolonial theory, e.g., Said, Bhabha, Spivak, Hulme, Guha, etc. Readings include representative texts from the Americas: chronicles, letters, epic poetry, lyrical poetry, and novel. The course is not exclusively concerned with written texts using the Latin alphabet, but will also study other cultural artifacts such as maps, icons, and Native American writing systems. Rbasaba

117. The Picaresque Novel. (3) Three hours of lecture per week. Prerequisites: 25. This course will examine the discourse of poverty in (primarily) Spanish narrative literature, both thematically and formally. Readings will include ancient Roman novels and medio- arabic and Italian stories, the “core” readings of Renaissance Spanish texts, and modern expressions of the picaresque sensibility. (F,SP) Navarrete

123A-123B. Modern Spanish Prose Fiction. (3,3) Three hours of lecture per week. Prerequisites: 25 or equivalent. (F,SP)

130. Twentieth-Century Spanish American Poetry. (3) Three hours of lecture per week. Prerequisites: 25 or equivalent. (F,SP)

131. The Spanish American Short Story. (3) Course may be repeated for credit as topic varies. Three hours of lecture per week. Prerequisites: 25 or equivalent. Brief panorama of the Spanish-American short story, beginning with Modernism, emphasis on two or three different types, e.g., fantastic, realistic, humorous, etc.

135. Studies in Hispanic Literature. (3) Course may be repeated for credit as topic varies. Three hours of lecture per week. Prerequisites: 25. (F,SP)

135AC. American Cultures Special Topics. (3) Course may be repeated for credit. Three hours of lecture per week. Prerequisites: 102A, as the course “American Cultures” satisfies the American Cultures requirement. (F,SP) Staff

135W. Studies in Hispanic Literature—Writing Intensive. (3) Course may be repeated for credit. Three hours of lecture per week. Prerequisites: 102A. The course satisfies the “American Cultures” requirement. (F,SP) Staff

148. Family Stories. (1) Two hours of lecture and one hour of discussion for five weeks. Must be taken on a pass/no pass basis. Prerequisites: Consent of the graduate or undergraduate major advisor. A short course designed to take advantage of short-term visitors who have expertise in the area of Latin American literature. Professor Gwen Kirkpatrick will teach the first introductory class and lead the first discussion session. The remaining four seminars and four hours of discussion will be taught by the distinguished Chilean novelist, Diamela Elgueta. Additional invited guests include the Berkeley campus by the Chancellor as Regents’ Lecturer. One short paper is required.

161. Spanish Phonetics and Phonology. (3) Three hours of lecture/discussion per week. Prerequisites: 25 or equivalent. A study of the sound system of Spanish, with both training in practical transcription and laboratory exercises. Introduction to structural and generative phonological analysis.

162. The Structure of Spanish. (3) Three hours of lecture per week. Prerequisite: Spanish 100 or equivalent, at instructor’s discretion; proficiency in Spanish. Analysis of major phonological principles of Spanish Morphology and Syntax following current theories. The course surveys the internal structure of words, the major parts of speech, the organization of the Spanish morphemic inventory, and the principles of the sentence construction. Students will practice analytical problems to see morphosyntactic processes at work.

163. Issues of Multilingualism. (3) Three hours of lecture per week. Prerequisites: 25 or its equivalent. Special topics: issues involved in the presence of different languages in the same community, such as bilingualism, multilingualism, language conflict, language and identity, language choice, and language planning. Problem-oriented, illustrated by case studies from relevant regions, including the United States. Particularly recommended for Option D majors (Hispanic Languages and Linguistic Issues).

164. Spanish Dialectology. (3) Three hours of lecture/discussion per week. Prerequisites: 100 or equivalent. This course will analyze how the Spanish language varies in the different regions where it is spoken (Spain, Spanish America, the United States) through an analysis of social and regional dialects and their representation in select literary works. It will address issues such as the establishment of a standard for the language, the relationship between the standard and nonstandard varieties, and its cultural and social implications. (F,SP)

165AC. Coexistence and Conflict: Amerindian, English, and Spanish in the Southwest. (3) Three hours of lecture per week. Prerequisites: 25 or consent of instructor. After a brief historical introduction, the overall features of the Amerindian, Spanish, and English in the Southwest will be presented. The main emphasis will be on their mutual influence, especially with regard to loanwords. Source material includes popular literature and folklore as well as modern linguistic studies. This course satisfies the American Cultures requirement.

166. Language and Style. (3) Three hours of lecture per week. Prerequisites: 25. Analysis of the linguistic component of literary and nonliterary texts (such as fiction prose, journalism, scientific writing, or advertising) from a linguistic viewpoint. Analysis of texts in Spanish and English comparing linguistic structures and highlights structural similarities and differences between these languages. Course applies to the comparative linguistics requirement of Option D.

167. Language and Society in Spanish-Speaking World. (3) Three hours of lecture/discussion per week. Prerequisites: 100 or equivalent. This course will discuss general principles of sociolinguistics and language variation. It will analyze social issues related to the Spanish language in Spain, Spanish America, and the United States, as well as its role as a world language. Specific topics will include an overview of the origins of Spanish, contact with other languages, regional and social variation, language policy, and Spain in the media. Ultimately, the course will provide a forum for reflection on the social implications of language. The readings will provide data and theory, and discussions will contribute to developing the habit of thinking critically about language. (F,SP) Azevedo

179. Advanced Course in Hispanic Linguistics. (3) Course may be repeated for credit as topic varies. Three hours of lecture per week. Prerequisites: 100 or consent of instructor.

C179. Special Topics in German. (3) Course may be repeated for credit as topic varies. Three hours of lecture/discussion per week. Prerequisites: 100. Issues in bilingualism for students of Spanish and English. This course explores what research on bilingualism says about what it means to learn someone else’s language—the cognitive, affective, and social dimensions of the phenomenon. Course will use primarily language acquisition, language and culture, and language and identity. Field-work will include observing, recording, and transcribing segments of foreign language classrooms, visits to bilingual schools in the area, and interviews with native speakers of various languages on campus. Course taught in English, open to any foreign language student, data collected in the languages of the participants. Also listed as German C179. (SP) Staff

185. Senior Course in Hispanic Literature. (3) Course may be repeated for credit as topic varies. Three hours lecture/seminar per week. Prerequisites: Restricted to majors in Spanish with 90 units of university work, including 15 upper division units in Spanish or Spanish American literature.

H195. Spanish Honors Course. (3) Individual conference. Prerequisites: 25 or consent of instructor for seniors standing. Limited to senior honors candidates. Directed study centering on the preparation/completion of an honors thesis (see Honors Program, Option A, above). (F,SP)

H195A. Spanish Honors Course. (1.5) Individual conference. Prerequisites: Spanish 100 or equivalent, 3.6 GPA in the major, 3.3 GPA overall. This is a two semester course. H195A will be graded at the end of the first semester, which will indicate that students are making progress on developing the thesis. During the second semester, each student will enroll in H195B and write an honors thesis.

H195B. Spanish Honors Course. (1.5) Individual conference. Prerequisites: Spanish and Portuguese major, 3.6 GPA in the major, 3.3 GPA overall. This is a two-semester course, graded at the end of the second semester. During the second semester, each student will write an honors thesis. Completion of the thesis is required for a final grade in H195B.

197. Field Studies. (1-4) Course may be repeated for credit. One to four hours of field work per week, per unit. Must be taken on a pass/no pass basis. Prerequisites: Consent of the instructor. Students will assist in the teaching of Spanish in local elementary and secondary schools. They will meet regularly with the instructor in charge and submit written reports. (F,SP)

199. Supervised Independent Study and Research. (1-4) Course may be repeated for credit. Individual conferences. Must be taken on a passed/not passed basis. Prerequisites: Senior honor status plus prepa-
200A. Spanish Proseminar. (4) Three hours of lecture per week.Formerly 200. The first-year seminar is a two-semester course that introduces students to central questions and debates in literary and cultural studies in Spanish and Portuguese. The second objective consists of developing research strategies and the mastery of different academic genres. It will function to introduce students to the research interests of the faculty and to identify potential mentors. Students write book reviews, précis, position papers, and abstracts for applying to conferences, and conference-length papers. (F) Rabasa

200B. Spanish Proseminar. (4) Three hours of lecture per week. Formerly 200. The second semester continues the work of 200A, and explores the central questions and debates in Spanish and Portuguese. By the end of the year, students are expected to write a major research paper that aims to reach a wider audience. (SP)

201. Literary Linguistics. (4) Course may be repeated for credit as topic varies. Two or three hours of lecture per week. Formerly 201. Applications of linguistic theory to literary texts and the analysis of fiction prose, discourse analysis, and the literary representation of speech. (F,SP) Azevedo

202. History of the Spanish Language. (4) Two or three hours of lecture per week. Formerly 202A. A survey of the development of Spanish from prehistoric times to the present, particularly in Europe and the Americas, but with due consideration of that elsewhere in the world. The course will be based on a standard textbook with assigned outside readings on specific topics: language samples, chiefly literary, from different periods and regions will be analyzed. There will be a midterm and final examination, plus a brief term paper (10 pages) on selected aspects of some variety of Spanish.

223. Major Poets of the Golden Age. (4) Two or three hours of lecture per week. Focus will change on an intellectual topic with a faculty member in a small-seminar setting. Freshman Seminars are offered to provide new students with the opportunity to explore an intellectual topic with a faculty member in a small-seminar setting. Freshman Seminars are offered (F)

225. The Spanish Enlightenment. (4) Two or three hours of lecture per week.

226. Spanish Romanticism. (4) Two or three hours of lecture per week.

227A. The Spanish Novel to 1850. (4) Two or three hours of lecture per week.

227B. The Spanish Novel Since 1850. (4) Two or three hours of lecture per week.

228. Modern Spanish Drama. (4) Two or three hours of lecture per week.

229. Modern Spanish Poetry (After Romanticism). (4) Two or three hours of lecture per week.

230. Colonial Spanish American Literature. (4) Two or three hours of lecture per week.

234A-234B. Modern Spanish American Poetry. (4) Two or three hours of lecture per week. A comprehensive survey of poetry in Latin America from 1880-1930, on the poetics of modernismo. Special attention given to the work of Ruben Dario and the heritage of Symbolism in Latin America. (F)

236A-236B. Modern Spanish American Prose. (4) Two or three hours of lecture per week.

240. Techniques of Literary Scholarship. (4) Two or three hours of lecture/seminar per week.

242. Literary Theory and Criticism. (4) Course may be repeated for credit as topic varies. Two or three hours of lecture/seminar per week.

243. Spanish Versification. (4) One hour of lecture per week. Must be taken on a satisfactory/unsatisfactory basis.

247. Computations in Hispanic Language and Literature. (4) Three hours of lecture per week. Must be taken on a satisfactory/unsatisfactory basis. Introduces students to the ways in which the computer may be applied to fundamental problems of scholarly research on the Hispanic languages and literatures. Emphasis on existing tools and machine-readable texts and data sets.

248. Special Topics. (1-5) Course may be repeated for credit as topic varies. Four hours of lecture/discussion per week for five weeks. Topics will vary from semester to semester. Please consult the graduate assistant for current topics.

260. Cervantes. (4) Course may be repeated for credit with different topic and consent of instructor. Two or three hours of lecture/seminar per week. Prerequisites: Graduate standing or consent of instructor. The reading and interpretation of the works of Cervantes, such as Don Quixote, Elote, the Galatea, and the dramatic works. Focus will change according to the needs and interests of members of the course. May be taken only in the semester in which the examination is attempted or in the immediately preceding one. (F,SP)

Professional Courses

301. Teaching Spanish in College. (3) Three class hours on foreign language teaching and learning per week. Must be taken on a satisfactory/unsatisfactory basis. Prerequisites: Graduate student instructor status. Lectures on methodology, grading and testing, class preparation, textbook evaluation, course design. Includes language laboratory observations and supervised classroom practice. Required for all new graduate student instructors. (F)

302. Practicum in College Teaching of Spanish and Portuguese. (3-6) Course may be repeated for credit. Three to six hours of classroom teaching with regular supervision per week; each three-hour lab with Spanish and Portuguese. Must be taken on a satisfactory/unsatisfactory basis. (F,SP)

322. Modern Spanish Spanish and Portuguese / 483

325. Seminar in Spanish Literature. (4) Course may be repeated for credit as topic varies. Two or three hours of lecture/seminar per week.

327. Special Seminars in Hispanic Literature. (4) Course may be repeated for credit. Individual conferences. Prerequisites: Graduate standing. Individual supervision on special programs of study or research in a restricted field not covered by available courses or seminars. (F,SP)

329. Special Advanced Study. (3-8) Restricted to students writing doctoral dissertations. Individual conferences. Sections 1-20 to be graded on a letter-grade basis. Sections 21-40 to be graded on a satisfactory/unsatisfactory basis. Prerequisites: Restricted to students writing doctoral dissertations. (F,SP)

601. Individual Study for Master’s Students. (3) Course does not satisfy unit or residence requirements for master’s degree. Must be taken on a satisfactory/unsatisfactory basis. Prerequisites: Approval of graduate adviser. Individual study, subject to the approval of the graduate adviser, intended to provide an opportunity for students to prepare for the qualifying examination required of candidates for the Ph.D. May be taken only in the semester in which the examination is attempted or in the immediately preceding one. (F,SP)

Portuguese

Lower Division Courses

11. Elementary Portuguese. (5) Five hours of lecture and two hours of laboratory per week. Beginning course. Not open to students who have taken Portuguese 101 or equivalent, nor native speakers. (F)

12. Elementary Portuguese. (5) Five hours of lecture and two hours of laboratory per week. Prerequisites: 11, or equivalent. Continuation of Portuguese 11. Not open to students who have taken Portuguese 101 or equivalent, nor native speakers. Completion of this course satisfies student requirements for Portuguese 101 or 102.

24. Freshman Seminar. (1) Course may be repeated for credit as topic varies. One hour of seminar per week. Sections 1-2 to be graded on a letter-grade basis. Sections 3-4 to be graded on a pass/not passed basis. Freshman Seminars are designed to provide new students with the opportunity to explore an intellectual topic with a faculty member in a small-seminar setting. Freshman Seminars are offered

B prefix=course for business majors
H prefix=honors course
R prefix=course satisfies R&RC requirement
AC prefix=course satisfies American Cultures requirement
*Professor of the Graduate School
†Recipient of Distinguished Teaching Award
26. Advanced Spoken Portuguese. (3) Three hours of lecture/discussion per week. Prerequisites: 8 or equivalent; or consent of instructor. Course designed to increase communication skills (speaking ability and listening comprehension) as well as to improve voca- 

28. Twentieth-Century Brazilian Literature. (3) Three hours of lecture per week. Prerequisites: 12 or equivalent. This course offers a historical-cultural perspective on Por-

107B. Survey of Portuguese Literature. (3) Three hours of lecture/discussion per week. Prerequisites: 4 or equivalent. A survey of Portuguese literature from the beginnings through the 17th century.

112. Portuguese Civilization. (3) Three hours of lecture per week. Prerequisites: 12 or equivalent. This course concentrates on the history of Portugal from the beginning of its existence as an independent nation to the end of the 19th century.

Emphasis on understanding, speaking and 

writing Portuguese. Taken in conjunction with Por-

tuguese 101A, the course provides an intensive in-

weeks. Sections 1-2 to be graded on a letter-

basis. Sections 3-4 to be graded on a letter-

grade basis. Prerequisites: At discretion of instructor. 

Sophomore seminars are small interactive courses of-

ered by faculty members in departments all across the campus. Sophomore seminars offer opportunity for close, regular intellectual contact between faculty members and students in the crucial second year. The topics vary from department to department and semes-

ter to semester. Enrollment limited to 15 sopho-

mores. (F,SP)

Upper Division Courses

Unless otherwise indicated, 20 units or equivalent of Portuguese or another Romance language are prerequisite to all upper division courses.

101A. Portuguese for Advanced Students. (3) Three hours of lecture per week. Prerequisites: Credit of 16-20 units or equivalent of another Romance language, or consent of instructor. Must be taken concomitantly with 101B. No independent reg-

istration. Emphasis on understanding, speaking and 

writing Portuguese. Taken in conjunction with Por-

tuguese 101A, the course provides an intensive in-

duction to the language. (F,SP)

102. Readings in Portuguese. (3) Three hours of lecture/discussion per week. Prerequisites: 101A-

101B, 12, or equivalent. The continuation of Por-

tuguese 101A-101B, this course focuses on a variety of texts with special emphasis on 20th century Brazil. Discussion in Portuguese; reinforcement and de-

velopment of language skills. (F,SP)

103. Advanced Grammar and Composition. (3) Three hours of lecture/discussion per week. Prere-

quisites: 1 to 4 and 102 or consent of instructor. Ad-

vanced work in Portuguese grammatical structures. Practice in writing. (F,SP)

104. Introduction to Brazilian Literature. (3) Three hours of lecture per week. Prerequisites: 4 or equiva-

lent. A survey of Brazilian literature from the beginnings through the 20th century, with attention to the rela-

tionships between literature and society.

Statistics

Department Office: 367 Evans Hall, (510) 642-2781

www.stat.berkeley.edu

Chairs

John Rice, Ph.D.

Professors

David J. Aldous, Ph.D. Cambridge University. Theoretical and applied probability

Peter L. Bartlett, Ph.D. University of Queensland. Machine learning, statistical learning theory


Ching-Shui Cheng, Ph.D. Cornell University. Experimental design

Steven E. Evans, Ph.D. Cambridge University. Probability and stochastic processes

Robert A. Freedman, Ph.D. Princeton University. Statistical inference, probability


Nicholas P. Jewell, Ph.D. University of Edinburgh. Epidemiology, infectious diseases, computational biology

Michael I. Jordan, Ph.D. University of California, San Diego. Machine learning, applied statistics, artificial intelligence

Michael J. Klass, Ph.D. Theoretical and applied probability

D. Robin Laan, Ph.D. D. Yale University. Asymptotic theory, teaching of statistics, technology in education

Yudh Peres, Ph.D. Hebrew University. Jerusalem. Epidemiology, infectious diseases, computational biology

James W. Pitman, Ph.D. Sheffield University. Probability, stochastic processes

John Rice (Chair), Ph.D. University of California, Berkeley. Applied statistics

Alistair Sinclair, Ph.D. University of Edinburgh. Design and analysis of algorithms, computational applications of stochastic processes and nonlinear dynamical systems, Markov chain Monte Carlo algorithms, statistical physics, computational biology

Terence P. Speed, Ph.D. Monash (Australia). Applied statistics

Philip Stark, Ph.D. Scripps Institution of Oceanography, University of California, San Diego. Applied statistics, inverse problems in physical oceanography

Mark van der Laan, Ph.D. University of Utrecht (The Netherlands). Computational biology, optimal methods for censored data and survival analysis with applications in medical research, causal inference in longitudinal studies

Kathryn W. Wachter, Ph.D. Cambridge. Multivariate analysis, demographic data

BingYu, Ph.D. University of California, Berkeley. Statistical inference, machine learning, applied statistics, information theory

Peter J. Bickel, Ph.D. (Emeritus)

David Blackwell, Ph.D. D.Sc. (hon.) (Emeritus)

Albert H. Bowker, Ph.D., LL.D. (hon.). Dr. of Human Letters (hon.) (Emeritus)

Kjell Doksum, Ph.D. (Emeritus)

Lester E. Dubins, Ph.D. (Emeritus)

Jacob Feldman, Ph.D. (Emeritus)

Erich L. Lehmann, Ph.D., D.Sc. (hon.) (Emeritus)

Catalan

Upper Division Courses

101. Catalan for Advanced Students. (3) Three hours of seminar per week. Prerequisites: 20 units or equivalent of another Romance language, or consent of instructor. An intensive course for stu-

dents with no previous study of Catalan.

102. Readings in Catalan. (3) Course may be re-

peated for credit when readings change. Three hours of lecture per week. Prerequisites: 1 and 2 or 101 or equivalent, or consent of instructor. Selected readings in Catalan prose and poetry.

Graduate Courses

285. Old Catalan Language and Literature. (4) Three hours of seminar per week. Reading and anal-

ysis of selected texts from the first documents of the Catalan language to the works of the major authors of the 15th century as well as an introduction of Old Cata-

lan. Faulhaber

285. Old Catalan Language and Literature. (4) Three hours of seminar per week. Reading and anal-

ysis of selected texts from the first documents of the Catalan language to the works of the major authors of the 15th century as well as an introduction of Old Cata-

lan. Also listed as Romance Philology 2123.

289. Special Study for Graduate Students. (3-8) Course may be repeated for credit as topic varies. Pre-

requisites: Graduate standing. Individual conferences on special programs of study or research in a restricted field not covered by available courses or seminars.
Emphasis on concepts and from Statistics 150, 151A, 151B, 152, 153, 155, and some familiarity with computers.

Department Overview

The department grants the B.A., M.A., and Ph.D. degrees in Statistics. The undergraduate and graduate programs allow students to participate in a field that is growing in breadth of application and importance. For more information, see www.stat.berkeley.edu. The standard Ph.D. program consists of course H195, which includes a statistical approach, and stochastic models and Markov random fields.

The M.A. program includes both students who are interested in the graduate statistics major should in- clude in the undergraduate courses a strong foundation in mathematics as well as probability and statistics. For Ph.D. degrees of the theoretical type, Mathematics 104, 105, 110, 113, and 185 are needed. For Ph.D. degrees of the applied type and the M.A. degree, at least a year of upper division probability and statistics (or course 200A-200B) and Mathematics 104 and 110 are needed.

Note: Only one lower division Statistics course may be taken for credit.


20. Introduction to Probability and Statistics. (4) Students who have taken 2, 2X, 5, 21, 21X, or 25 will receive no credit for 21. Three hours of lecture and two hours of laboratory per week. Prerequisites: One semester of calculus. Descriptive statistics, probability models and related concepts, sample surveys, estimates, confidence intervals, tests of significance, correlation, and experiments. Testing hypotheses. Estimation. Illustrations from various fields. (F,SP)

21. Introductory Probability and Statistics for Business. (4) Students who have taken 2, 2X, 5, 20, 21X or 25 will receive no credit for 21. Three hours of lecture and two hours of laboratory per week. Prerequisites: One semester of calculus. Descriptive statistics, probability models and related concepts, sample surveys, estimates, confidence intervals, tests of significance, correlation, and experiments. Testing hypotheses. Estimation. Illustrations from various fields. (F,SP)

24. Freshman Seminars. (1) Course may be repeated for credit as topic varies. One hour of seminar per week. The Berkeley Seminar Program has been designed to provide new students with the opportunity to explore an intellectual topic with a faculty member in a small-seminar setting. Berkeley seminars are offered in all campus departments, and topics vary from department to department and semester to semester. Enrollment limited to 15 freshmen. (F,SP)


39. Freshman/Sophomore Seminar. Course may be repeated for credit as topic varies. Sections 1-2 to be graded on a letter-grade basis. Sections 3-4 to be graded on a pass/no pass basis. Prerequisites: Priority given to freshmen and sophomores. Freshman and sophomore seminars offer lower division students the opportunity to explore an intellectual topic with a faculty member in a small-seminar setting. These seminars are offered in all campus departments; topics vary from department to department and from semester to semester.
84. Sophomore Seminar. (1,2) Course may be repeated for credit as topic varies. One hour of seminar per week for 15 weeks. One and one-half hours of seminar per week for 10 weeks. Three hours of seminar per week for eight weeks. Three hours of seminar per week for five weeks. Sections 1-2 to be graded on a passed/not passed basis. Prerequisites: At discretion of instructor. Sophomore seminars are small interactive courses offered by faculty members in departments all across the campus. Seminars are designed to offer opportunities to integrate and to evaluate topics in probability; loss-based estimation (e.g., least-squares regression, maximum likelihood estimation); model selection; multiple hypothesis testing; Markov chains; hidden Markov models, resampling, simulation studies. Biological questions considered include, but are not limited to, modeling meiosis; genetic mapping; nucleotide and protein-sequence analysis; molecular evolution; cancer; cell growth and DNA microarray experiments. The course also introduces statistical computing resources for the analysis of biological data, with emphasis on the R language and environment (www.r-project.org) and bioconductor.org. In addition, the course introduces basic notions in genetics and molecular biology and involves the critical reading of articles related to statistical analyses in the biological and medical sciences. Also listed as Public Health C143. (SP) Dudoit

98. Directed Group Study. (2) Two hours of group study per week. Must be taken on a passed/not passed basis. Prerequisites: Consent of instructor. Must be taken at the same time as either Statistics 2 or 21. This course assists lower division statistics students with structured problem solving, interpretation and making conclusions. (F,SP)

Upper Division Courses

101. Introduction to the Theory of Probability. (4) Students will not receive credit for 101 after taking 134. Three hours of lecture and one hour of laboratory per week. Prerequisites: Math 53 and 54. Random variables and expectation; independence, sample spaces, independence, multivariate normal distribution, conditioning, simulation, and other computer applications.

131A. Statistical Inferences for Social and Life Scientists. (4) Three hours of lecture and two hours of laboratory per week. Prerequisites: One semester of calculus or consent of instructor. Ideas for estimation and hypothesis testing basic to applications. Linear estimation and normal regression theory. (F,SP)

133. Concepts in Computing with Data. (3) Two hours of lecture and two hours of computer laboratory per week. Prerequisites: Consent or consent of instructor and basic notions in genetics and molecular biology and involves the critical reading of articles related to statistical analyses in the biological and medical sciences. Also listed as Public Health C143. (SP) Dudoit.

134. Concepts of Probability. (3) Students will not receive credit for 134 after taking 101. Three hours of lecture per week. Prerequisites: One year of calculus. An introduction to probability, emphasizing concepts and applications. Conditional expectation, independence, laws of large numbers and central limit theorems. Selected topics such as the Poisson process, Markov chains, characteristic functions. (F,SP)

135. Concepts of Statistics. (4) Students will not receive credit for 135 after taking 102. Three hours of lecture and two hours of laboratory per week. Prerequisites: 101 or 103A or 134. An introduction to computational intensive applied statistics. Topics will include organization and use of databases, visualization and graphics, statistical learning and data mining, model validation procedures, and the presentation of results. (F,SP)

150. Stochastic Processes. (3) Three hours of lecture per week. Prerequisites: 101 or 103A or 134. Random walks, discrete time Markov chains, Poisson processes. Further topics such as: continuous time Markov chains, queueing theory, point processes, branching processes, stationary processes, Gaussian processes. (SP)

151A-151B. Linear Modelling: Theory and Applications. (4;4) Three hours of lecture and two hours of laboratory per week. Prerequisites: 102 or 135. A coordinated treatment of linear and generalized linear models and their application. Linear regression, analysis of variance and covariance, random effects, design and analysis of experiments, quality improvement, log-linear models for discrete multivariate data, model selection, robustness, graphical techniques, productive use of computers, in-depth case studies.

152. Sampling Surveys. (4) Three hours of lecture and two hours of laboratory per week. Prerequisites: 101 or 134. Theory and practice of sampling from finite populations. Simple random, stratified, cluster, and double sampling designs. Survey sampling probability and statistics; a course in linear algebra. (F,SP)

153. Introduction to Time Series. (4) Three hours of lecture and two hours of laboratory per week. Prerequisites: 101 or 134 or consent of instructor. An introduction to time series analysis in the time domain and spectral domain. Topics will include: estimation of trends and seasonal effects, autoregressive moving average models, forecasting, indicators, harmonic analysis, spectra.

155. Game Theory. (3) Three hours of lecture per week. Prerequisites: 101 or 134. General theory of zero-sum, two-person games, including games in extensive form, two-person zero-sum games, and illustrated by detailed study of examples.

157. Seminar on Topics in Probability and Statistics. (3) Three hours of seminar per week. Prerequisites: Math 53-54 and consent of instructor. Substantive student participation required. The topics to be covered are decided by the students taking the seminar. Some knowledge of Lebesgue integral and/or elementary probability is helpful, but not essential, given otherwise strong mathematical background. Measure theory concepts needed for probability. Expectation, distributions, laws of large numbers and central limit theorems for independent random variables. Conditional distribution methods. Conditional expectations; martingales and theory convergence. Markov chains. Stationary processes. Also listed as Mathematics C218A. Staff

C205A. Probability Theory. (4) Three hours of lecture per week. Some knowledge of real analysis and metric spaces, including compactness, Riemann integral. Knowledge of Lebesgue integral and/or elementary probability is helpful, but not essential, given otherwise strong mathematical background. Measure theory concepts needed for probability. Expectation, distributions. Laws of large numbers and central limit theorems for independent random variables. Conditional distribution methods. Conditional expectations; martingales and theory convergence. Markov chains. Stationary processes. Also listed as Mathematics C218B. Staff

C205B. Probability Theory. (4) Three hours of lecture per week. Some knowledge of real analysis and metric spaces, including compactness, Riemann integral. Knowledge of Lebesgue integral and/or elementary probability is helpful, but not essential, given otherwise strong mathematical background. Measure theory concepts needed for probability. Expectation, distributions, laws of large numbers and central limit theorems for independent random variables. Characteristic function methods. Conditional expectations; martingales and theory convergence. Markov chains. Stationary processes. Also listed as Mathematics C218B. Staff

206A-206B. Stochastic Processes. (3;3) Course may be repeated for credit with different instructor. The content of this course changes from year to year. These topics will be selected from: the general theory of processes, sample function properties, weak convergence, Brownian motion, diffusions, Levy processes, Markov processes, martingales, Gaussian processes and further topics. (F,SP)

210A-210B. Theoretical Statistics. (4;4) Three hours of lecture per week. Prerequisites: A year of upper division probability and statistics; a course in linear algebra. A survey of mathematical statistics; in particular both small and large sample theorems of hypothesis testing, point estimation, and confidence intervals with applications to topics such as exponential families, univariate and multivariate linear models and nonparametric inference. (F,SP)

212A. Topics in Theoretical Statistics. (3) Course may be repeated for credit with different instructor. Three hours of lecture per week. Prerequisites: 210A or 215 and 216A and 216B. This course introduces the student to topics currently receiving interest in theoretical statistics. Typical topics, which change from year to year, include the following: parametric, semiparametric and nonparametric modeling; time series and survival analysis; model selection; empirical and point processes; asymptotic behavior of bootstrap, stochastic search and Monte Carlo integration; convergence of experiments; minimum distance methods.

215A-215B. Statistical Models. Statistical Models: Theory and Application. (4;4) Three hours of lecture and two hours of
laboratory per week. The techniques of applied statistics. Data types and structures. Model formulation, fitting and validation. The principal models. Planning and analysis. Difficulties that arise. Usage of statistical computer packages. Presentation of conclusions. (F,SP)

230A. Linear Models. (4) Three hours of lecture and two hours of laboratory per week. Prerequisites: Matrix algebra, a year of calculus, two semesters of upper division science courses. Standard parametric tests and confidence intervals for continuous and categorical data; non-parametric estimation of quantiles; robust estimation of location and scale parameters. Efficiency comparison with other procedures. (F)


C241B. Advanced Topics in Learning and Decision Making. (3) Three hours of lecture per week. Prerequisites: C241A. Computer Science C281A. Recent topics include: Graphical models and approximate inference algorithms. Markov chain Monte Carlo, mean field and probability propagation methods. Model selection and stochastic realization. Bayesian information theory, model averaging and risk. Markov decision processes and partially observable Markov decision processes. Reinforcement learning. Also listed as Computer Science C281B. (SP)

243. Introduction to Statistical Computing. (4) Corequisite: Course for credit. Three hours of lecture and two hours of laboratory per week. Prerequisites: Graduate standing. The structure and use of statistical languages and packages. Use of graphical displays in data analysis. Statistical data base management. (F)

244. Statistical Computing. (4) Three hours of lecture and two hours of laboratory per week. Prerequisites: Knowledge of a higher level programming language. Algorithms in statistical computing: random number generation, Monte Carlo methods, other distributions, random sampling and permutations. Matrix computations in linear models. Non-linear optimization with applications to statistical procedures. Other topics of interest, such as issues of efficiency, and use of graphics. (SP)

C245A. Biostatistical Methods: Advanced Categorical Data Analysis. (4) Three hours of lecture and two hours of laboratory per week. Prerequisites: 200A (may be taken concurrently). This course focuses on statistical methods for discrete data collected in public health, clinical and biological studies. Lectures topics include proportions and counts, contingency tables, logistic regression models, Poisson regression and log-linear models, Poisson and binomial exact tests, and generalized linear models. Computing techniques, numerical methods, simulation and general implementation of biostatistical analysis techniques with emphasis on data applications. Also listed as Public Health C240A. Offered odd-numbered years. (F) Staff

C245B. Biostatistical Methods: Survival Analysis and Causality. (4) Three hours of lecture and two hours of laboratory per week. Prerequisites: 200B (may be taken concurrently). This course focuses on survival analysis of survival time data using parametric and non-parametric models, hypothesis testing, and methods for analyzing censored (partially observed) data with covariates. Topics include: accelerated failure time models, estimation of a generalized multivariate linear regression model (allowing missing covariates and/or outcomes), estimation of a multiplicative intensity model (such as Cox proportional hazards model), and estimation of causal parameters assuming marginal structural models. General theory for developing locally efficient estimators of the parameters of interest in censored data models. Computing techniques, numerical methods, simulation and general implementation of biostatistical analysis techniques with emphasis on data applications. Also listed as Public Health C240B. Offered even-numbered years. (SP) van der Laan

C245C. Biostatistical Methods: Computational Techniques with Applications to Observational Survival Data. (4) Three hours of lecture and two hours of laboratory per week. Prerequisites: 200A (may be taken concurrently). An introduction to computational techniques commonly used in a variety of statistical applications, including algorithms for variable selection, model tuning, smoothing methods, bootstrapping, trees and neural networks; clustering; isotonic regression; Markov chain Monte Carlo methods. Lecture topics illustrate the structure and complexity of observational survival analysis and genomics, and other biostatistical applications. Also listed as Public Health C240C. Offered even-numbered years. (F) Staff

C245D. Biostatistical Methods: Applications of Statistics to Genetics and Molecular Biology. (4) Three hours of lecture and two hours of laboratory per week. Prerequisites: 200A-200B (may be taken concurrently) or consent of instructor. This course surveys applications of probability and statistics to genetics and molecular biology. Specific topics of interest include modeling meiosis, genetic mapping, nucleotide and protein sequence analysis, DNA microarray experiments, and biological metadata analysis. Related statistical topics include multiple hypothesis testing, survival summaries of data, stochastic processes, experimental design, loss-based estimation methods, multiple hypothesis testing, resampling, and simulation studies. The course discusses biological computing resources for the analysis of biological data, the R language and environment (www.r-project.org) and Bioconductor software packages (www.bioconductor.org). It also provides an introduction to basic notions in genetics and molecular biology. Reading of articles related to statistical analyses in the biological and medical sciences. Also listed as Public Health C240D. Offered even-numbered years. (SP) Dudot

246. Statistical Genetics. (4) Three hours of lecture and two hours of laboratory per week. Modeling meiosis, linkage mapping, pedigree analysis, genetic epidemiology. Clone libraries, physical mapping of chromosomes. Radiation hybrid mapping. DNA and protein sequence analysis, molecular evolution, sequence alignment, database searching. Analysis of microarray expression data. (SP)

C247C. Longitudinal Data Analysis. (4) Three hours of lecture and two hours of discussion per week. Prerequisites: Public Health 124, 145, 241 or equivalent courses in basic statistics, linear and logistic regression. The course covers the statistical issues surrounding estimation of effects using data on subjects followed through time. The course emphasizes a regression model approach and discusses disease incidence and survival models. Also listed as Public Health C240D. (F)

248. Analysis of Time Series. (4) Three hours of lecture and two hours of laboratory per week. Prerequisites: 102 or equivalent. Frequency-based techniques for analysis of time series data. Spectral estimation of spectra, estimation of transfer functions, design, system identification, vector-valued stationary processes, model building.

C249A. Censored Longitudinal Data and Causality. (4) Three hours of lecture and two hours of laboratory per week. Prerequisites: C240B or consent of instructor. This course examines optimal robust methods for statistical inference regarding causal and non-causal parameters based on longitudinal data in the presence of informative censoring and informative confounding of treatment. Models presented include multivariate regression models, multiplicative intensity models for counting processes, and causal models such as marginal structural models and structural nested models. Methods will be illustrated with data sets of practical interest and analyzed in the laboratory section. This course, appropriate for advanced masters and Ph.D. students, provides exposure to a number of ongoing research topics. Also listed as Public Health C246A. Offered even-numbered years. (SP) van der Laan

C249C. Multiple Testing and Loss Function Based Estimation: Applications in Biological Sciences. (3) Three hours of lecture per week. Prerequisites: Public Health 240D or consent of instructor. Statistical computer-intensive methods have become an integral part of the analysis of cross-sectional and longitudinal studies involving the collection of genomic data such as microarrays, single nucleotide polymorphisms, and comparative genomic hybridization measurements across the whole genome. These data structures are extremely high dimensional and the characteristics (parameters of interest) of interest are complex (high dimensional), and outcomes such as survival are often subject to censoring. In addition, one often aims to learn and test many univariate characteristics simultaneously (e.g., regression coefficient for each gene). This course will present 1) a unified loss-function-based approach to learning from the data such characteristics which relies on general cross-validation theory to select regularizers, 2) a resampling-based multiple testing methods controlling type I errors, and 3) clustering methods embedded into a statistical framework. Also listed as Public Health C246C. (F) van der Laan

250. Applied Stochastic Processes. (3) Course may be repeated for credit. Three hours of lecture per week. Various aspects of applied stochastic processes. Offered according to student demand and faculty availability.

251. Stochastic Analysis with Applications to Mathematical Finance. (3) Three hours of lecture per week. Prerequisites: 205A or consent of instructor. The essentials of stochastic analysis, particularly those most relevant to financial engineering, will be surveyed: Brownian motion, stochastic integrals, Itô’s formula, representation of martingales, the martingale representation theorem, stochastic differential equations, and diffusion processes. Examples will be taken from the Black-Scholes-Merton theory of pricing and hedging contingent claims such as options, foreign exchange derivatives, and interest rate related contracts. (SP)

260. Topics in Probability and Statistics. (3) Course may be repeated for credit. Three hours of lecture per week. Special topics in probability and statistics offered according to student demand and faculty availability.

C261. Quantitative/Statistical Research Methods in Social Sciences. (3) Two hours of lecture per week. Prerequisites: 200A-200B, Public Health 241 or equivalent courses in basic statistics, linear and logistic regression model approach and discusses disease incidence and survival models. Also listed as Public Health C240D. Offered even-numbered years. (SP) Hubbard, Jewell

†Recipient of Distinguished Teaching Award
*Professor of the Graduate School
Statistics / 487

B prefix=language course for business majors
H prefix=honors course
R prefix=course satisfies R&Co requirement
W prefix=course satisfies American Cultures requirement

*Professor of the Graduate School
†Recipient of Distinguished Teaching Award
loglinear models and latent-structure analysis; the analysis of cross-classified data having ordered and unordered categories; measure, models, and graphical displays in the analysis of cross-classified data; econometric analysis, association analysis, and related methods of data analysis. Also listed as Sociology C271D.

272. Statistical Consulting. (3) Course may be repeated for credit. Two hours of session per week and individual meetings as necessary. Must be taken on a satisfactory/unsatisfactory basis. Prerequisites: Some coursework in applied statistics and permission of instructor. To be taken concurrently with service as a consultant in the department’s drop-in consulting service. Participants will work on problems arising in the service and will discuss ways general of handling such problems. There will be working sessions with researchers in substantive fields and occasional lectures on consulting. (F,SP)

278B. Statistics Research Seminar. (1-4) Course may be repeated for credit. Two or more hours of seminar per week. Must be taken on a satisfactory/unsatisfactory basis. Special topics, by means of lectures and informational conferences. (F,SP)

296. Resources for Statistical Computing. (1) One hour of lecture per week and a small amount of hands on work. Statistical computing plays a central role in research and in instruction at all levels of the department’s curriculum. This course provides first year graduate students with an introduction to the Statistical Computing Facility, including the basis of the UNIX system and commonly used packages, thus enabling them to use it effectively in their own courses and research and as teaching assistants in undergraduate courses. (F)

298. Directed Study for Graduate Students. (1-12) Course may be repeated for credit. Prerequisites: Consent of instructor. Special tutorial or seminar on selected topics. (F,SP)

299. Individual Study Leading to Higher Degrees. (2-12) Course may be repeated for credit. (F,SP)

Professional Courses

300. Professional Preparation: Teaching of Probability and Statistics. (2-4) Course may be repeated for credit. One or two hours of lecture and two to four hours of laboratory per week. Must be taken on a satisfactory/unsatisfactory basis. Prerequisites: Graduate standing and appointment as a graduate student instructor. Discussion, problem review and development, guidance of laboratory classes, course development, supervised practice teaching. (F,SP)

Theater, Dance, and Performance Studies

(College of Letters and Science)

Department Office: 101 DeWitt Annexe, (510) 642-1677
ls.berkeley.edu/dept/theater
Chair/Director: W.B. Worthen, Ph.D.

Professor
Joe Goode, B.A. Virginia Commonwealth University. Dance, choreography
Mel Gordon, Ph.D. New York University. Stanislavsky, directing, acting
Mark Griffin, Ph.D. Cambridge University. Classical Greek drama
Shannon Jackson, Ph.D. Northwestern University. Performance theory, 18th-century drama
Robert W. Goldsby, M.F.A. (Emeritus)
Donnion Opter III, Ph.D. (Emeritus)
John Warren Travis, M.F.A. (Emeritus)
Mami Thomas Wood, B.A. (Emerita)

Associate Professor
Peter Glazer, Ph.D. Northwestern University. Stage directing, design

Assistant Professors
Brandi Wilkins Catanean, Ph.D. Stanford University. African American drama and theatre
Sudipto Chatterjee, Ph.D. New York University. Bengali theatre, postcolonial studies
Shannon Steen, Ph.D. Stanford University. American Studies, race theory, performance studies
Elizabeth Wymore, M.F.A. University of Illinois, Urbana-Champaign. Modern dance technique, choreography

Lecturers
Ruqau Barreto, M.F.A. Costume Design
Martin Berman, B.A. Acting
Lura Dolas, M.A. Acting
David K. H. Elliott, B.A. Design
Christopher Herold, Ph.D. Acting and directing
Jennifer Johnson, M.A. Dance history
Christopher Killon, M.F.A. Technical Direction
Carol Muruta (SOE) M.A. Dance
Deborah Sussel, B.F.A. Acting

Affiliated Faculty
Janet Adelman (English)
Joel Altman (English)
Mary Ann Smart
Anton Kaes
Susan Galaun
Deborah Sussel, B.F.A. Acting
Christopher Killion, M.F.A. Acting
Dunbar Ogden III, Ph.D. Acting
Mary Wertman (Theatre, Dance, and Performance Studies)

At Berkeley, we understand performance to be a mode of critical inquiry, a means of creative expression, and a vehicle for public engagement.

Located within the Division of Arts and Humanities at one of the world’s great universities, the faculty, staff, and students in the Department of Theater, Dance, and Performance Studies—and in the allied Ph.D. in Performance Studies—pursue a wide spectrum of research and production activities. We see performance as an interdisciplinary form, exploring verbal, visual, spatial, and embodied modes of experience. We perform dance as a transnational cultural form, exploring the politics and poetics of social life in all parts of the world. We see performance as a public forum for contemporary ideas, allowing us to test and debate the central concerns of our time that is at once critical, emotional, and collective.

The faculty is nationally and internationally known both for its scholarly and for its artistic work in acting, design, directing, choreography, and experiential performance. Our curriculum ranges from the classics to the contemporary; it cuts across theatrical, dance, and visual art forms; it spans all corners of the globe, using the environment of performance to deepen UC Berkeley’s critical education in the humanities. Indeed, at a time when scholars and educators call for more cross-disciplinary intellectual collaboration and project-based learning in higher education, we take pride in our daily commitment to collaboration and to the kind of intellectually rigorous, team-oriented projects we develop with our students, staff, and faculty both in the classroom and in our production season.

Undergraduate majors and minors are well prepared for the future, both as artists and as engaged citizens of the world. The flexibility and integration of our majors in Theater and Performance Studies and in Dance and Performance Studies makes our majors excellent candidates for a variety of professions in the social, corporate, legal, and arts sectors, as well as for admission to graduate programs in the arts and in professional schools. We are proud of the ways our graduates use their critical and expressive skills toward success in careers as professional artists in dance, theatre, and experimental performance, as well as in law, advertising, human resources, publishing, radio, technology, social work, and in all aspects of non-profit and business administration. Through the course of their studies, students pursue intensive work in acting, design, directing, technical production, dance technique, and choreography. At the same time, they take vital cultural-studies courses that set the literary, historical, political, theoretical, and aesthetic concerns of performance in dialogue with other disciplines in the arts, humanities, and social sciences. The faculty teaches at all levels and students have ample opportunity to study with important scholars and practitioners.

Undergraduate degree programs are offered in both Theater and Performance Studies and Dance and Performance Studies; while all students in these majors fulfill general requirements in one of these two programs, they are encouraged to specialize in one of several areas within the department offerings. To complete UC Berkeley requirements outside the major, students are encouraged to select complementary courses in dramatic literature, culture and performance, visual arts, and music in a wide range of departments in the College of Letters and Science, particularly in its Division of Arts and Humanities.

The Majors

The department’s major programs (theater and performance studies and dance and performance studies) are based on the study of theater and dance and the various aspects of their production. Students are encouraged to pursue their particular interests in the disciplines of design, theatrical performance, performance studies, history, cultures, and theory of performance), criticism, directing, technical production, and playwriting. All majors begin with a core of both practical and critical work; students then select an area of concentration (i.e., performance studies, design, acting, technical production, choreography) and shape their programs in consultation with the faculty advisor. In the senior year, all majors may undertake critical or performance projects or both as the culmination of their studies.

Major Requirements

Theater and Performance Studies

Students should choose, in consultation with the faculty or staff adviser, an area of concentration from the upper division courses in the department. Sample programs are available in the departmental office.

Lower Division. 10, 25AC or 52AC, 26, and 60.

Upper Division. At least 30 units of upper division courses in the Department of Theater, Dance, and Performance Studies, including four courses in the following areas of concentration, with at least one course in three of the areas. Courses satisfying this requirement are drawn from this list of approved courses:
A. Performance Theory: 119
B. Performance and History: 125, C133, 151A, 151B, or 153A
C. Performance Literature: 126, 127, C131A, C131B, C132
D. Performance and Culture: 121, 130, or 153B

In addition, students must take courses from these areas:
Production or design: One course from 172, 173A, 173B, 174A, 174B, 175A, 175B:
Theater laboratory (4 units): 2 of the 4 units must be taken in 170. The remaining 2 units may be taken in 170 or two participations in 171 or 181;
Electives: Upper division courses approved by an adviser.

Dance and Performance Studies
Lower Division. 26, 52AC or 25AC, 60.
Technique: After declaring the major, students are required to take a technique course each semester: 40A, 40B, 141A, 141B, 142A, 142B, 143A, or 143B.

Upper Division. Thirty units of upper division courses in the Department of Theater, Dance, and Performance Studies including 144, 145, and 146A. Four courses from those listed in Theater and Performance Studies (see A, B, C, D above), Students must take four courses in three areas of concentration.
Theater laboratory (4 participations): 170, 171, 180, 181.
Electives: Upper division courses approved by an adviser.

Theater and Performance Studies Minor
Students should choose, in consultation with the faculty or staff adviser, an area of concentration from the upper division courses in theater arts or from other departments. Sample programs are available in the department office. Students may declare the minor after enrolling in at least one course in the department.

Lower Division. One course chosen from 10, 25AC, 26, 52AC, or 60.

Upper Division. Five upper division theater arts courses (three of which must be taken at Berkeley) by advising approval. Students may declare the minor after enrolling in at least one course in the department.

Dance and Performance Studies Minor
Students should choose, in consultation with the faculty or staff adviser, an area of concentration from the upper division dance courses in theater arts or from other departments. Sample programs are available in the department office.

Lower Division. One course chosen from 25AC, 26, 40A, 40B, 52AC, African American Studies 25A or 60.

Upper Division. Five upper division theater arts courses (three of which must be taken at Berkeley) by advising approval and including one upper division dance technique course. Students must maintain a minimum GPA of 2.0 in the upper division units for the minor.

Rules for Passed/Not Passed
No course in Theater, Dance, and Performance Studies offered in satisfaction of undergraduate major requirements may be taken on a passed/not passed basis except 40A-40B, 141A-141B, 142A-142B, 143A-143B, 170, 171, 198, and 199.

Honors Program
Majors in the Department of Theater, Dance, and Performance Studies with an overall grade-point average of 3.3 in the University and in the major may, with the approval of the department, apply for admission to the Honors Program. Students should apply through a departmental major adviser no later than March 1 of their junior year. Students accepted in the Honors Program will include in their honors program a study of problems of dramatic literature, performance studies, acting, playwriting, directing, dance, or design; and H195B, development of studies begun in 195A, either as a stage production or a written thesis.

Graduate Program
Core Faculty: Janet Adelman (English), Brandi Wilkins Calanesi (Theater, Dance, and Performance Studies and African American Studies), Sudipto Chatterjee (Theater, Dance, and Performance Studies), Vasudha Dalima (South and Southeast Asian Studies), Peter Glazer (Theater, Dance, and Performance Studies), Mel Gordon (Theater, Dance, and Performance Studies), Mark Griffith (Theater, Dance, and Performance Studies and Classics), Shannon Jackson (Theater, Dance, and Performance Studies and Rhetoric), Carol Murola (Theater, Dance, and Performance Studies), Laura Perez (Ethnic Studies), Miyram Sas (East Asian Languages and Culture, and Comparative Literature in Smart Literacies Music), Shannon Steen (Dance, and Performance Studies and American Studies), Trinh Minh-ha (Gender and Women’s Studies and Rhetoric), Kaja Silverman (Rhetoric and Film Studies), Sophie Volp (Comparative Literature and East Asian Languages and Cultures).

Affiliated Faculty: Joel Altman (English), Charles Briggs (Anthropology), Judith Butler (Rhetoric and Comparative Literature), VE46 Clark (African American Studies), Dru Dougherty (Spanish and Portuguese), Joe Goode (Theater, Dance, and Performance Studies), Anton Kaes (German and Film Studies), John Lie (Sociology and Center for East Asian Studies), Carol Ades (English), Charles T. Aselage (English), Thomas Banfield (English), Peter Brueggeman (Sociology), Carol Bunge (Sociology), Joan Copjec (Philosophy), Ann Cvetkovich (Women’s Studies),3 Carol Genre (English and Comparative Literature), Stephen Greenblatt (Comparative Literature and East Asian Languages and Cultures),3 Walter Goldschmiedt (Philosophy),3 Leon von Stengel (Philosophy),3 Richard K. Sakai (East Asian Languages and Culture),3 Anne K. Yen (East Asian Languages and Culture),3 Mary T. Lindemann (Philosophy),3 Jeanne Macpherson (English),3 Helen Monaima (English),3 Jacob Rozenblit (History),3 Susan Rynes (History),3 Philip Selz (American Cultural Studies),3 LeRoy E. Stowell, Jr. (Law and Legal Studies),3 Ronald W. Sturtevant (Sociology),3 Richard S. Woodson (Oral History and American Culture),3 Mary C. Wrigley (Philosophy),3 and Leon W. Smith (Philosophy).3

The Graduate Group in Performance Studies provides an interdisciplinary and individually crafted curriculum directed toward advanced studies in the literatures, performances, cultural contexts, and theoretical questions fundamental to cultural identity, the comparison of selected cultural groups and their relationship to American society as a whole, and the study of drama as an instrument for understanding and expressing cultural identity. Theater of specific cultural groups to be included will be determined by the availability of live theater productions offered on campus and in the Bay Area. This course satisfies the American Cultures requirement. (F.S.P)

25AC. The Drama of American Cultures: An Introduction to Our Theater. (4) Three hours of lecture per week. Prerequisites: Consent of instructor. Formerly Dramatic Art 254AC. This course provides an introduction to American theater through the study of works and issues fundamental to cultural identity, the comparison of selected cultural groups and their relationship to American society as a whole, and the study of drama as an instrument for understanding and expressing cultural identity. Theater of specific cultural groups to be included will be determined by the availability of live theater productions offered on campus and in the Bay Area. This course satisfies the American Cultures requirement. (F.S.P)

26. Introduction to Performance Studies. (4) Three hours of lecture per week. Formerly Dramatic Art 26. This course introduces the critical terms and practices of the contemporary study of performance. Several key concepts and important genres of art and social performance will be engaged; the course will draw critical and disciplinary methods from anthropology and ethnography, from the theory of dance and theater, from literary and cultural theory, from sociological and philosophical concerns. Concepts will be used to analyze a wide range of live and recorded performances, as well as performance texts. (F.S.P) Staff

30. Movement for Actors. (2) Three hours of lecture per week. Staff

39. Freshman/Sophomore Seminar. (1-3) Course may be repeated for credit as topic varies. One to three hours of seminar per week. Prerequisites: Prior to fall term, students must present a proposal to a faculty member and a group of peers in a small-seminar setting. These seminars are offered in all campus departments, and topics vary from department to department and from semester to semester. (F.S.P) Staff

40A-40B. Beginning Modern Dance Technique. (1-1) Course may be repeated for credit. Seven and one-half hours of studio per week. Prerequisites: Audition and consent of instructor. Formerly Dramatic Art 40A. Study in elementary body alignment and basic locomotor techniques, utilizing the body and extremities as a totality. (F.S.P) Staff

52AC. Reflections of Gender, Culture, and Ethnicity in American Dance. (3) Three hours of lecture per week. Formerly Dramatic Art 52AC. Working with these questions: How do the corporate form of any dance event serve as a window on culture, we focus on dance associated with at least three of the following groups: American Indians, Asian Americans, indige-
nous peoples of the United States, Chicano/Latinos, and European Americans. We will look at traditional dance events as well as transcultural currents in American dance. The course satisfies the American Cultures re-

60. Stagecraft. (3-4) Two hours of lecture per week and 60 hours of laboratory per semester. Prerequisites: Enrollment via TeleBEARS, consent of instructor given after evaluation during first week of class. Formerly Dramatic Art 60. A practical introduction to the theories, approaches, and applications of con-

66. Special Topics: Theater Arts. (1-4) Course may be repeated for credit. Number of units will vary depending on specific course format and requirements. One hour of lecture or three hours of laboratory per week per unit. Prerequisites: Consent of instructor. For-

84. Sophomore Seminar. (1-2) Course may be repeated for credit as topics vary. One hour of seminar per week per unit for 15 weeks. One and one-half hours of seminar per unit for 10 weeks. Three hours of seminar per week for one unit. Five hours of seminar per week for two units. Sections 1-2 to be graded on a pass/no credit basis. Prerequisites: At discretion of instructor. Sophomore seminars are small interactive courses of-

98. Directed Group Study. (5-5) Course may be repeated for credit. Enrollment is restricted; see the In-

99. Independent Study. (1-5) Course may be repeated for credit. Enrollment is restricted; see the In-

C107. Plays of Ibsen. (4) Three hours of lecture/discus-

C108. Strindberg. (4) Three hours of lecture per week. Prerequisites: Open to senior students only. Formerly Dramatic Art 97. Study of a topic not included in the regular department curriculum. Topics may be initiated by students. (F,S,P) Staff

100A/10B. Intermediate Acting. (3-3) Course may be repeated for credit. Six hours of studio per week. Prerequisites: Audition, one year of undergraduate work in acting, or consent of instructor. (F,S,P) Staff

111. Advanced Acting. (3) Course may be repeated for credit. Six hours of sessions per week plus prepa-

C110. History of the African American Music The-

C132. African American Dramatic Literature: Forms and Styles. (3) Three hours of lecture/laboratory per week. Formerly Dramatic Art C132. Introduction to play analysis with emphasis on the primary theatrical form of styles chosen by African American playwrights and the theatrical consequences of the choices that have been made both as literature and as theatrical pro-

C133. Contemporary African American Drama. (4) Four hours of lecture per week. Formerly Dramatic Art C133. The survey of content by African American writers and the portrayal of the black ex-

C131A. African American Plays from 1858 to 1959. (3) Four hours of lecture per week. Formerly Dramatic Art C131A. Historical survey of plays by African American writers and the portrayal of the black experience in theater. Emphasis on predominant themes, struc-

C131B. Contemporary African American Drama. (4) Four hours of lecture per week. Formerly Dramatic Art C131B. Survey of content by African American writers and the portrayal of the black experience in American theater. Emphasis on predominant themes, structural tendencies, socio-historical context. Also listed as African American Studies C151A. (S,P)

C132. African American Dramatic Literature: Forms and Styles. (3) Three hours of lecture/laboratory per week. Forme-

141A-141B. Intermediate Modern Dance Technique. (3) Three hours of lecture per week. Formerly Dramatic Art 141A. May be repeated for credit as topic varies. Three half-hours of lecture per week. Prerequisites: 141A-

142A-142B. Advanced Modern Dance Technique. (1,1) Course may be repeated for credit. Seven and one-half hours of studio per week. Prerequisites: 40A-

143A-143B. Modern Dance Technique Advanced II. (1,1) Course may be repeated for credit. Seven and one-half hours of studio per week. Prerequisites: 142A-

144. Sources of Movement. (3) Four and one-half hours of lecture/studio per week. Prerequisites: Open to seniors only. Formerly Dramatic Art 144. Beginning application of dance technique as a means of communication in the theatre. Use of basic technical fundamentals as a means of extending natural, rooted movement in rhythm, or movement, and an emphasis on style and qualitative analysis. (S,P)

145. Music Resources for Performance. (3) Three hours of lecture/studio per week. Prerequisites: 144 or consent of instructor. Formerly Dramatic Art 145.
Students of set, stage design, costume design, technical assistance in scene or costume shop. (F,SP)

Advanced workshop and presentation of an individual work as part of the program of the department. (F,SP)

This course relates choreography to theatrical presentation. The course is taught by faculty choreographing and directing a variety of dance themes, movement vocabularies, and styles. (SP) Johnson

Course may be repeated for credit. Hours to be arranged. Must be taken on a passed/not passed basis. Prerequisites: Consent of instructor. Formerly Dramatic Art 170. Non-performing participation in the University Theatre to include: Stage management; crew assistance in light-, sound, properties, costumes, make-up, backstage; technical assistance in scene or costume shop. (F,SP) Staff

30 hours of lecture per week and 120 hours of laboratory per week. Prerequisites: Consent of instructor. Formerly Dramatic Art 175. This course is an advanced discussion and practice of the various stages of conceptualization, from the earliest phases of choreographic invention to opening night and the run of the production(s). (F,SP) Staff

This course relates choreography to theatrical production. The course will be taught by faculty involved in the major productions. (F,SP) Staff

Course may be repeated for credit. 138 hours of laboratory per week. Prerequisites: Audition or consent of instructor. Formerly Dramatic Art 180. This course relates choreography to theatrical production. Lab hours are spent in attendance at rehearsal, coaching sessions, and the performance of the dance concert. The course is taught by faculty choreographing the production in the departmental season. (F,SP) Staff

Course may be repeated for credit. Six hours of lecture and twelve hours of laboratory per week. Prerequisites: Consent of instructor. Formerly Dramatic Art 390. This course relates choreography to theatrical presentation. The lectures are based on the analysis of the work being presented. Laboratory hours are spent in attendance at rehearsal, coaching sessions, and the performance of the dance concert. The course is taught by faculty choreographing the production in the departmental season. (F,SP) Staff

Course may be repeated for credit. Five hours of laboratory per week. Prerequisites: Consent of instructor. Formerly Dramatic Art 393A. This course relates choreography to theatrical presentation. The lectures are based on the analysis of the work being presented. Laboratory hours are spent in attendance at rehearsal, coaching sessions, and the performance of the dance concert. The course is taught by faculty choreographing the production in the departmental season. (F,SP) Staff

Course may be repeated for credit. Eight hours of laboratory per week. Prerequisites: Consent of instructor. Formerly Dramatic Art 179. Students are trained in the working methods of set or costume design; supervised preparation and implementation of designs in the department’s production season, from initial discussions through opening night. (F,SP) Staff

Theatrical Realization of Dance. (3-1) Course may be repeated for credit. Five hours of laboratory per week. Prerequisites: 173A or 173B, 174A or 174B, 175A or 175B, or consent of instructor. Formerly Dramatic Art 179. Students are trained in the working methods of set or costume design; supervised preparation and implementation of designs in the department’s production season, from initial discussions through opening night. (F,SP) Staff

Course may be repeated for credit. Six hours of lecture and twelve hours of laboratory per week. Prerequisites: Consent of instructor. Formerly Dramatic Art 170. Non-performing participation in the University Theatre to include: Stage management; crew assistance in lighting, sound, properties, costumes, make-up, backstage; technical assistance in scene or costume shop. (F,SP) Staff

Course may be repeated for credit. Hours to be arranged. Must be taken on a passed/not passed basis. Prerequisites: Consent of instructor. Formerly Dramatic Art 170. Non-performing participation in the University Theatre to include: Stage management; crew assistance in lighting, sound, properties, costumes, make-up, backstage; technical assistance in scene or costume shop. (F,SP) Staff

Course may be repeated for credit. Three hours of lecture and three hours of laboratory per week. Prerequisites: 173A is the prerequisite to 173B. (F,SP)

Course may be repeated for credit. Three hours of lecture and three hours of laboratory per week. Prerequisites: Consent of instructor. Formerly Dramatic Art 175A. An introduction to theatrical lighting, including practical application through Dramatic Art productions. (F,SP)

Course may be repeated for credit. Three hours of lecture per week and laboratroy to be arranged. Prerequisites: Consent of instructor; restricted enrollment of 18. Formerly Dramatic Art 175A. An introduction to theatrical lighting, including practical application through Dramatic Art productions. (F,SP)

Course may be repeated for credit. Two hours of lecture/discussion and five hours of laboratory per week. Prerequisites: 173A and 173B, or equivalent and at least 75 production hours of experience. Formerly Dramatic Art 176. Students of set, stage design, costume design, technical assistance in scene or costume shop. (F,SP) Staff

This course relates choreography to theatrical production. The course will be taught by faculty involved in the major productions. Also listed as African American Studies C143A.

Course may be repeated for credit. Three hours of lecture per week. Formerly Dramatic Art C183A. Introduction to the Re-doing of performance. African aesthetics, and dramatic performance techniques. Course will survey wide range of writings on performance and investigate applications through exercises and improvisations. Students will also assist in information gathering for works in progress. Also listed as African American Studies C143B.

Course may be repeated for credit. Three hours of lecture per week. Formerly Dramatic Art C183B. Development of scholarly material for theatrical presentation and enhancement of dramatic performance techniques through discussions, improvisations and readings of work conceived by the class and/or writers in other African American Studies courses. All source material will be based on the research of scholars in the field of African American Studies. Also listed as African American Studies C143B.

Course may be repeated for credit. Three hours of lecture per week. Formerly Dramatic Art 184. This course relates choreography to presentation. Laboratory hours are spent in attendance at rehearsal, coaching sessions, and the performance of an individual work as part of the program of the dance concert. The course is taught by faculty members choreographing individual works for the dance concert.
concert, the major dance production of the department season. (F,SP) Staff

191. Framing the Arts at UC Berkeley. (5,1) One and one-half to two and one-half hours of lecture for six weeks. Two and one-half to five hours of lecture for three weeks. Formerly Dramatic Art 191. The focus of this course varies based on the exhibits, screenings, and performances being presented at the Berkeley Art Museum, Pacific Film Archive, and Cal Performances. The work of well-established artists is used to illustrate historical trends; emerging artists illustrate cutting-edge developments. This course encourages students to integrate the arts into their intellectual pursuits and develop long habits of involvement in and appreciation of the fine arts. (F,SP) Staff

H195A. Honors Course. (4) Hours to be arranged. Prerequisites: Honors status in the Department of Theater, Dance, and Performance Studies. Theater production projects also require 60 and 162; dance production projects also require 60 and 146B. Formerly Dramatic Art H195A. Independent study and conferences with faculty sponsor leading to preparation of a major research paper on a single aspect of theater, dance, or performance studies. May include a performance component. (F,SP)

H195B. Honors Course. (4) Hours to be arranged. Prerequisites: Honors status in the Department of Dramatic Art; successful completion of H195A and consent of production chair if performance is involved. Formerly Dramatic Art H195B. Development of subject studied in H195A, either as a bachelor's thesis or a laboratory project in acting, directing, playwriting, design, or dance. (F,SP)

196. University Theatre Workshop. (4) Course may be repeated for credit. Hours to be arranged. Prerequisites: Department approval; theater projects also require 60 and 162; dance projects also require 60 and 146B. Formerly Dramatic Art 196. Individual directorial projects for advanced undergraduates. Research, try-out, callbacks, and rehearsals which result in performing for the public will average 20 hours per week. (F,SP) Staff

197. Field Studies in Technical Theatre. (1-4) Course may be repeated for credit. Enrollment is restricted; see the Introduction to Courses and Curriculum section of this catalog. Hours to be arranged. Must be taken on a passed/not passed basis. Prerequisites: Consent of Instructor. Formerly Dramatic Art 197. Supervised experience, in connection with theatrical production in fields of scenic construction; costume construction and conservation; theatrical lighting; stage management; publicity; theatre management; production management.

198. Directed Group Study for Undergraduates. (5-5) Course may be repeated for credit. Enrollment is restricted; see the Introduction to Courses and Curriculum section of this catalog. One-half to five hours of directed group study per week. Must be taken on a passed/not passed basis. Formerly Dramatic Art 198. Supervised group study of special topics, subject to approval by the chair. (F,SP)

199. Supervised Independent Study and Research. (1-3) Course may be repeated for credit. Enrollment is restricted; see the Introduction to Courses and Curriculum section of this catalog. Individual study. Must be taken on a passed/not passed basis. Prerequisites: Eight or more units in the Department of Dramatic Art, with an average grade of B. Restricted to honor students. Formerly Dramatic Art 199. Reading and conference with an instructor in an area not corresponding with any regular course. (F,SP)

Graduate Courses

200. Graduate Colloquium on Interdisciplinary Research in Performance. (1-2) Course may be repeated for credit. Graduate students in dramatic art are required to take this course at least three times, the first time for 2 units and thereafter for 1 unit. Two hours of colloquium per week. Formerly Dramatic Art 200. This course is designed to introduce graduate students to the research resources of the University, to the research interests and methodologies of the faculty affiliated with the Ph.D. program, to theater as a profession, and to trends and developments in theater studies. Students will work collaboratively on research projects. (F,SP) Staff

201. Performance Theory. (4) Three hours of seminars per week. Formerly Dramatic Art 201. This course is an annual seminar for graduate students focusing on key issues in the theory of theatrical performance, with an emphasis on contemporary theoretical inquiry. Issues of representation and identity, presence, community, social efficacy, reception and its effects, and the roles of performer and production elements will be addressed. (F,SP) Staff

202. Methodologies and Approaches to Theater in Context. (4) Three hours of seminars per week. Formerly Dramatic Art 202. Study of different approaches and contemporary methodologies for analyzing the vicissitudes of various kinds within their cultural and historical context. (F,SP) Staff

203. Theatrical Texts, Spaces, and Bodies. (2-4) Course may be repeated for credit. One and one-half to three hours of seminars per week. Formerly Dramatic Art 203. Conceived as a bridge between the academic and practical aspects of theater studies, this course combines a research seminar with a performance workshop. The instructor uses the seminar portion of the course to develop a significant issue in the theory and practice of contemporary performance; students then conduct a six-week rehearsal and workshop performance in conjunction with the seminar. Course may involve visiting artists when possible. (F,SP) Staff

266. Special Topics: Theater Arts. (1-4) Course may be repeated for credit. Number of units will vary depending on specific course format and requirements. One hour of lecture or three hours of laboratory per week per unit. Formerly Dramatic Art 266. Topics vary from semester to semester and have included The Power of Music and Poetry in the Theater; Modern Drama and Theater, 1940 to the Present; Theater, Tricksters, and Cultural Exchange; Art as Social Action; and The Invisible World (Process Seminar). (F,SP) Staff

277. Special Studies in Directing, (1-4) Course may be repeated for credit. Hours to be arranged. Prerequisites: Advancement to candidacy for the Ph.D. and consent of instructor. Formerly Dramatic Art 277. Advanced practice in play direction. (F,SP)

294. Directed Research. (1-12) A maximum of 12 units may be divided among several instructors during a semester. Prerequisites: Graduate standing in Dramatic Art and consent of instructor. Formerly Dramatic Art 294. Meetings to be arranged, either individually or as a group to explore fields not covered in courses listed elsewhere in Dramatic Art’s offerings. May be taken by students engaged in writing dissertations. (F,SP)

298. Directed Group Study. (1-4) Course may be repeated for credit. One unit of credit for each three hours of lecture. Prerequisites: Completion of one year of graduate study recommended. Formerly Dramatic Art 298. Special study or research of topics not covered by regular courses or seminars. May not be substituted for available seminars. (F,SP) Staff

299. Special Study. (1-4) Course may be repeated for credit. One unit of credit for every three hours of independent study. Prerequisites: Graduate standing. Formerly Dramatic Art 299. May be taken when preparing prospectus, graduate portfolio, and/or oral presentation before qualifying oral examination. May not be substituted for available seminars. (F,SP) Staff

602. Individual Study for Doctoral Students. (1-12) Course may be repeated for credit. Course does not satisfy unit or residence requirements for doctoral degree. Hours to be arranged. Must be taken on a satisfactory/unsatisfactory basis. Formerly Dramatic Art 602. Individual study in consultation with the major field adviser, intended to provide an opportunity for qualified students to prepare themselves for the various examinations required of candidates for the Ph.D. (F,SP)

Professional Courses

300. Professional Preparation: Supervised Teaching in Dramatic Art. (2-4) Course may be repeated for credit. Hours to be arranged. Must be taken on a satisfactory/unsatisfactory basis. Prerequisites: Graduate standing, appointment as a teaching assistant or associate, or consent of instructor. Formerly Dramatic Art 300. Discussion, problem review and development, course development, supervised practice of teaching. (F,SP)
Undergraduate and Interdisciplinary Studies
(College of Letters and Science)

Office: 301 Campbell Hall, (510) 642-0108
ls.berkeley.edu/ugis.html
Interim Dean: Christiñ Masách, Ph.D.

Mission

Undergraduate and Interdisciplinary Studies (UGIS) in the Undergraduate Division of the College of Letters and Science serves as a center for innovations in undergraduate education that extend beyond traditional departmental boundaries. Our major and minor programs attract undergraduates who wish to explore the most intellectually engaging and promising interdisciplinary fields under the direction of scholars who are pioneers in charting these new areas and methods of inquiry. UGIS has been, and continues to be, an incubator for new ideas, including experimental programs and courses, as well as curricula designed to promote the ideals of a liberal education. We are especially dedicated to creating programs such as the Freshman Seminar Program and the Undergraduate Research Program that nurture productive intellectual relationships between faculty members and students.

Field Major

Interdisciplinary Studies. The ISF major affords an undergraduate an opportunity to pursue an interdisciplinary framework for their studies. The program allows students to establish individualized areas of concentration using courses in the humanities, the social sciences, and/or the professional schools and colleges.

Group Majors

American Studies. This group major offers students the opportunity to study American society using a wide range of methods drawn from a variety of disciplines in the College of Letters and Science and the professional schools and colleges. American studies courses will attempt to take into account how the cultures of America have been continually reshaped by movements of people, commerce, and ideas crossing borders. The major draws on faculty resources and research in literature, history, economics, architecture, material culture, media studies, ethnic studies, and urban and regional studies.

Cognitive Science. This group major is the cross-disciplinary study of the structure and processes of human cognition and their computational simulation or modeling. This interdisciplinary program has been designed to give students an understanding of questions dealing with human cognition, such as concept formation, visual perception, the acquisition and processing of natural language, and human reasoning and problem solving. The program draws on relevant courses found within the fields of biology, computer science, education, linguistics, neuroscience, philosophy, and psychology, as well as specially designed lower and upper division courses in cognitive science.

Environmental Sciences. The environmental sciences group major is jointly administered by the College of Letters and Science and the College of Natural Resources. The curriculum of the major emphasizes a broad and comprehensive education in the fundamentals of biology, chemistry, physics, and mathematics, and in social science directly related to environmental problems. The major is concerned with interactions between human activities and biological and physical environments on all scales, from local to global. Students acquire the necessary skills for rigorous documentation and prediction of environmental problems and for making sound recommendations for their avoidance or mitigation.

International and Area Studies. The International and Area Studies Program office (101 Stephens Hall, (510) 642-4466) administers group majors in Asian Studies, Development studies, Latin American Studies, Middle Eastern studies, peace studies (PACS), and post-industrial economy of industrial societies (PEIS). For information about those group majors, see the International and Area Studies section of this catalog.

Mass Communications. The major applies a range of disciplines in the social sciences and humanities to the understanding of contemporary mass media and their structure, history, content, consequences, and policy implications.

Religious Studies. The major provides opportunities for securing a broad background in the liberal arts while at the same time allowing for a focus on a thematic concern or a particular religious tradition. The major views religion from a global perspective and combines aspects of the humanities and social sciences. A religious studies minor is also available.

Minor Programs

The Creative Writing Minor requires a minimum of three upper division creative writing courses and three approved upper division electives chosen from a wide variety of courses from numerous departments. The creative writing minor is housed in the Office of Undergraduate and Interdisciplinary Studies, 301 Campbell Hall. A student handbook outlining minor requirements in detail is available at the minor office. For more information, call the UGIS office at (510) 642-0108 or go to ls.berkeley.edu/ugis/ds.

Minor Programs

The Disability Studies Minor The Disability Studies Minor offers a major chance to meet the challenges and alleviate the problems of those with impairments or disabilities, with emphasis on the role of these factors in shaping problems and evaluating solutions. The minor requirements consist of two core courses and three approved upper division electives chosen from a wide variety of courses from numerous departments. The Disability Studies minor is housed in the Office of Undergraduate and Interdisciplinary Studies, 301 Campbell Hall. A student handbook outlining minor requirements in detail is available at the minor office. For more information, call the UGIS office at (510) 642-0108 or go to ls.berkeley.edu/ugis/ds.

Other Programs

In addition to the majors listed above, the Office of Undergraduate and Interdisciplinary Studies has developed innovative introductory courses such as Topics in Western Civilization, The Development of World Civilization, and upper division colloquia and research courses.

The College Writing Programs (112 Wheeler Hall, (510) 642-5570), designed to help undergraduates establish fluency and control over their reading and writing skills, is also in the Office of Undergraduate and Interdisciplinary Studies.

The Freshman and Sophomore Seminars arose from the conviction that early intellectual contact with faculty members would greatly enhance the undergraduate experience at Berkeley. Professors from nearly every campus department join together each semester to design a seminar array of seminars. The courses numbered 24 (and in some cases 90) bear 1 unit of credit; they are limited to 15 students, and freshmen are given priority for enrollment. The courses numbered 24-39 and 56-98 bear 1 or 2 units of credit; they are limited to 15 sophomores. The courses numbered 39A-39Z are limited to 25 freshmen and sophomores. Seminars, which emphasize interaction and discussion, provide a counterpoint to the learning experience in Berkeley's large lecture halls. These seminars also offer lower division students an unprecedented opportunity to explore a wide range of majors and even fields of study usually reserved for graduate students. As you browse through this catalog, you will find lower division seminars sponsored by Letters and Science departments as well as by the professional schools and colleges.

Descriptions of all the seminars scheduled for the upcoming semester can be found in time for Tele-BEARS registration on the program’s web site at letters.berkeley.edu, which offers useful information and features for undergraduates. For additional information regarding the Freshman and Sophomore Seminars, please contact the program office at 333 Campbell Hall, (510) 642-8578.

Letters and Science Discovery Courses. Students in the College of Letters and Science are asked to fulfill seven breadth requirements. The Letters and Science Discovery Courses are exemplary breadth courses, designed to engage and broaden the minds of non-experts. Taught by some of the most distinguished faculty members on campus, the L&S Discovery Courses are guaranteed to deliver a high-quality educational experience. For more information, visit the current list of courses and the breadth requirements they fulfill, go to lsdiscovery.berkeley.edu.

Scholarship Connection is Berkeley's clearinghouse for information on scholarships that are funded by sources outside the University. Enrolled Berkeley students may search for awards on Scholarship Connection’s online database at scholarships.berkeley.edu. In addition to providing information on many externally funded awards, the Scholarship Connection offers workshops and individual advising to help applicants prepare competitive applications for these prestigious awards. For more information, visit scholarships.berkeley.edu or contact Scholarship Connection, 301 Campbell Hall, scholarships@berkeley.edu, (510) 643-6929.

The UC Berkeley Washington Program allows undergraduates to spend a semester in Washington, D.C. Students in the program combine coursework with field research in an internship that reflects the student's particular interests. For more information, please call (510) 642-9102, M24 Wheeler Hall, or go to learning.berkeley.edu/ucdc.

The Office of Undergraduate Research (OUR) seeks to involve undergraduates more deeply in the research life of the University. To this end, OUR coordinates and develops programs and resources that bring undergraduates into the field, laboratories, and archives. For information on research workshops and the great variety of undergraduate research opportunities, visit the Research @ Berkeley home page: research.berkeley.edu, or visit the program office at 301 Campbell Hall.

The Undergraduate Research Apprentice Program (URAP) is the ideal place for students to begin their research apprenticeship. Undergraduate research apprentices, students gain skills and perspectives as they assist faculty with research. Over 800 students participate in this program each year, working closely with faculty from department and college. Visit the URAP web site at research.berkeley.edu/urap for a current list of faculty projects, come to 301 Campbell Hall, or call (510) 643-5376.

When students are ready to embark on research of their own design, the Haas Scholars Program and the Berkeley Scholars Program are among the resources that allow students to pursue sophisticated research. For information about these and other programs, visit the web site at research.berkeley.edu.
C10. The Eye and Vision in a Changing Environment. (2) Two hours of lecture per week. Course covers introduction to the basis of common sight reducing visual disorders with major public health implications for society, frame design, digital eye symptoms, and rapidly evolving technology. May be repeated for credit. Also listed as Optometry C10. (SP) Adams

C12. Introduction to Environmental Studies. (4) Will count toward core requirement 10 (environmental issues) for the conservation and resource studies major. Students will not receive credit for C12 after taking Environmental Science, Policy, and Management C12, or Environmental Science, Policy, and Management C12, or Environmental Science, Policy, and Management C12, or Environmental Science, Policy, and Management C12. Three hours of lecture and one and one-half hours of discussion per week. This innovative course taught by a scientist and a humanities professor introduces students to the basic intellectual tools of environmental science; investigates ways the human relationship to nature has been imagined in literature and philosophy; examines how science and technology have contributed to the evolution of our present attitudes toward the forest. Also listed as History C189, Environ Sci, Policy, and Management C191, and American Studies C112F. (F,SP)

24. Freshman Seminar. (1) Course may be repeated for credit as topic varies. One hour of seminar per week. Sections 1-2 to be graded on a letter-grade basis. This course is designed to provide new students with the opportunity to explore an intellectual topic with a faculty member in a small seminar setting. Freshman seminars are offered in all campus departments, and topics vary from department to department and semester to semester. Enrollment limited to 15 freshmen. (F,SP)

39. Freshman/Sophomore Seminar. Course may be repeated for credit as topic varies. Priority given to freshmen and sophomores. One hour of seminar per week per unit. Sections 1-2 to be graded on a letter-grade basis. This seminar introduces students to the basic intellectual tools of environmental science; investigates ways the human relationship to nature has been imagined in literature and philosophy; examines how science and technology have contributed to the evolution of our present attitudes toward the forest. Also listed as History C189, Environ Sci, Policy, and Management C191, and American Studies C112F. (F,SP)

R44A. Topics in Western Civilization. (5) Three hours of lecture and two hours of discussion per week. Prerequisites: Completion of UC Entry Level Writing Requirement. Formerly 44A. Homeric and Classical Greece, Rome in its transition from republic to empire, and the world of the Old Testament. The course will meet in small groups for discussion, Lectures, discussions, and reading assignments will involve interdisciplinary approaches with an emphasis on the development of skill in writing. Satisfies either half of the Reading and Composition requirement. (F,SP) Staff

R44B. Topics in Western Civilization. (5) Three hours of lecture and two hours of discussion per week. Prerequisites: Completion of UC Entry Level Writing Requirement. Formerly 44B. Will include the New Testament, renaissance literature (Shakespeare and Dante) and the history and literature of the Renaissance. The course will meet in small groups for discussion, Lectures, discussions, and reading assignments will involve interdisciplinary approaches with an emphasis on the development of skill in writing. Satisfies either half of the Reading and Composition requirement. (F,SP) Staff

R44C. Topics in Western Civilization. (4-5) Three hours of lecture and one (for 4 units) or two (for 5 units) hours of discussion per week. Prerequisites: Completion of UC Entry Level Writing Requirement required to enroll for 5 units. Formerly 44C. Beginning with the Middle Ages and the Renaissance, the 17th century through the 18th century, or from the constitutional revolution in England (1688) and through the French and American Revolutions. Will meet in small groups for discussion and writing. Satisfies either half of the Reading and Composition requirement. (F,SP) Staff

98. Directed Group Study for Lower Division Students. (1-4) Course may be repeated for credit as topic varies. Must be taken on a passed/not passed basis only. This course may be repeated for credit as topic varies. One hour of seminar per week. Topics may vary from semester to semester. (F,SP)

Upper Division Courses

110. Introduction to Disability Studies. (3) Three hours of lecture per week. This course focuses on the social and personal meaning of disability and chronic illness. We will explore definitions and conceptual models for the study of disability, the history of disabled people, bio-ethical perspectives, the depictions of disability in literature and the arts, public attitudes, and legal and social policies. The course will investigate the interaction of disability with social factors such as gender, class, race, age, sexual orientation, and ability. The course is for students with and without disabilities, and may be of special interest to students preparing for careers in the health professions, education, law, architecture, social work, or gerontology. (F,SP) Staff

112. Women and Disability. (3) Three hours of lecture per week. This course will explore the intersection of women’s experience and disability issues, emphasizing the social and personal impact of disability and chronic illness on relationships, identity, employment, health, body image, sexuality, marriage, motherhood, and aging. Through real stories of women’s lives which reached the media in the last decade and before, students will move toward a dynamic understanding of the impact of physical, emotional, and mental disabilities in the context of current social forces and public policy. We will explore historic perspectives as well as current trends in medicine, independent living, care-giving, insurance, public benefits, law, and community activism as they affect and are affected by disabled women and girls and their families. We will discuss controversial ethical issues such as prenatal screening, wrongful birth law suits, and physician-assisted suicide. Course readings will draw on the rich literature of disabled women’s autobiographies, biography and autobiography, scholarly and popular literature for the study of disability, the history of women’s art, film, and theatre. (F,SP) Saxton

116. Disability, Identity, and Social Movements. (3) Three hours of lecture per week. This course discusses the disability movement as a social movement, examining the forces which unite and those which divide it. It attempts to capture the mood and culture of the movement—its humor, passion, and anger. Injuries which disabled people experience are analyzed, and the divisions within the movement are analyzed. This is an introductory-level course and assumes no previous study of disability or social theory. (F,SP) Sherry

C132. Children Through History: Social Practices and Social Welfare. (4) Three hours of lecture and one hour of discussion per week. This course bridges the multicultural and interdisciplinary approaches with an emphasis on the development of skill in writing. Satisfies either half of the Reading and Composition requirement. (F,SP) Staff

C153. Visual Autobiography. (4) Three hours of lecture per week. Prerequisites: Consent of instructor. Since we are increasingly taught to see the world as separate disciplines, we will use theories from both to study those forms of self-representation that defy disciplinary boundaries, or what we call “visual autobiography.” The course aims to be conversant with the elements of alphabetic literacy (reading and writing) and visual literacy (observing and making) in order to develop a third distinctive textual/visual literacy. Also listed as Visual Studies C185A, American Studies C174, and English C143V. This course satisfies the American Cultures requirement.

C136. The American Forest: Its Ecology, History, and Representation. (4) Three hours of lecture and one hour of discussion per week. The American forest will be examined in terms of its ecology, history, and representation in maps, photographs, and literature. May be repeated for credit as topic varies. One hour of seminar per week. Topics may vary from semester to semester. Also listed as Architecture C119.

C152. Jewish Civilization I: The Biblical Period. (4) Three hours of lecture and one hour of discussion per week. This is the first course in a four-course sequence in the history of Jewish culture and civilization. It covers the biblical period and the period up to the destruction of the second temple. This course will explore the evolution of Jerusalem and the holy temple, the role of women's experience and disability issues, early Jewish history, and the development of Jewish thought and practice. (reading and writing) and visual literacy (observing and making) in order to develop a third distinctive textual/visual literacy. Also listed as Visual Studies C185A, American Studies C174, and English C143V. This course satisfies the American Cultures requirement.

C137. Office of the Future. (3) Three hours of lecture per week. Prerequisites: Upper division standing. Conventional office design will undoubtedly change, primarily in response to concerns about productivity and health. How can research, especially psychological research, help us improve the design of offices? What should offices look like 10-50 years from now? Will they be used? These are questions the course will try to answer. Also listed as Architecture C119.

C153. Judaism in Late Antiquity. (4) Three hours of lecture and one hour of discussion per week. This is the third course in a four-course sequence in the history of Jewish culture and civilization. It covers the middle ages and the early modern period, including Jewish, mediæval poetical literature, Jewish philosophy, and the Italian Jewish renaissance. Also listed as History C175A and Religious Studies C134. Staff

C154. Jewish Civilization: Middle Ages. (4) Three hours of lecture and one hour of discussion per week. This is the third course in a four-course sequence in the history of Jewish culture and civilization. It covers the middle ages and the early modern period, including Jewish, mediæval poetical literature, Jewish philosophy, and the Italian Jewish renaissance. Also listed as History C175A and Religious Studies C134. Staff

C155. Jewish Civilization: Modern Period. (4) Three hours of lecture and one hour of discussion per week. This is the fourth course in a four-course sequence in the history of Jewish culture and civilization. It explores the major themes in Jewish history from 1750 to the present, with special attention paid to the transformation of Jewish communal and individual identity in the modern world. Topics to be treated include the breakdown of traditional society, enlightenment and emancipation, assimilation, Hasidism, racial anti-Semitism, colonialism, Zionism, and contemporary Jewish life in Europe, North America, and Israel. The study of Jewish history will be highlighted throughout the course through the treatment of non-European Jewish nar-
Urban Design

(College of Environmental Design)

Office: 202 Wurster Hall, (510) 642-2965
mud.ced.berkeley.edu

Professors

Nezar AlSayyad, Ph.D. (Architecture)
Peter C. Bosselmann, M.Arch. (Architecture, City and Regional Planning, Landscape Architecture and Environmental Planning)
Elizabeth Deakin, J.D., M.C.P. (City and Regional Planning)
Harrison Fraker Jr., Dean, M.F.A., F.A.I.A. (Architecture)
Randolph T. Hester Jr., M.L.A. (Landscape Architecture and Environmental Planning)
Linda L. Jewell, M.L.A. (Landscape Architecture and Environmental Planning)
Daniel Solomon, M.Arch. (Architecture)
Michael Southworth, Ph.D., M.C.P. (City and Regional Planning, Landscape Architecture and Environmental Planning)

Richard Bender, Ph.D. (Architecture) (Emeritus)
Allan B. Jacobs, M.C.P. (City and Regional Planning, Landscape Architecture and Environmental Planning) (Emeritus)
Dorlyn Lyndon, M.F.A., F.A.I.A. (Architecture) (Emeritus)

Associate Professor

Walter J. Hood Jr., M.Arch., M.L.A. (Landscape Architecture and Environmental Planning)

Program Overview

The Master of Urban Design Program is a unique, interdisciplinary program of advanced study in which exceptional architects, landscape architects, and planners holding professional degrees can partake in an intense, focused learning experience. They will share working methods, acquire additional skills, and explore new avenues of development under the supervision of an interdisciplinary group of faculty members in the College of Environmental Design drawn from the Departments of Architecture, Landscape Architecture and Environmental Planning, and City and Regional Planning.

The program addresses the need for professionals who are concerned specifically with the design of varied urban areas open to public use. The activities of urban design are diverse in both type and scale. Urban designers may be concerned with settlement patterns in urbanizing areas, town layout, the restructuring of inner cities, and the design of streets and open spaces, buildings, and landscape patterns that establish neighborhoods and provide the settings for public life. They may shape the form and space of specific places such as civic or shopping centers, or they may design citywide systems such as streets, lighting, signing, greenways, or bicycle and pedestrian ways. They may work on infill in older towns and cities, or they may prepare plans, guidelines, or standards to manage extensive new development at the metropolitan growth edge.

The need for urban designers is as urgent today as in any period of recent history. Worldwide, the cities of both developing and developed countries are struggling with problems of managing rapid growth. Urban design professionals are as necessary in cities of developing countries where infrastructure and land use patterns are being established as in developed cities, where historical continuity and the reuse of existing sites are major issues. A need exists for designers who are able to work effectively in teams across a large range of scales and with a well-developed understanding of urban places and the interdependencies of the fabric of buildings, landscapes and public ways, and the social interactions that shape them.

Information on the program and degree requirements is available from the Graduate Office in 202 Wurster Hall, (510) 642-2965, or at mud.ced.berkeley.edu. For information on courses specifically designed for the Master of Urban Design Program, please see the descriptions for ENV DES 201, ENV DES 251, and ENV DES 252 in the Environmental Design section of this catalog.