African American Studies
(College of Letters and Science)

Department Office: 660 Barrows Hall, (510) 642-7084
Chair: Stephen Small, Ph.D.

Professors
Charles Henry, Ph.D. University of Chicago. Black politics, political economy of political and economic development, and cross sectional analysis.
Percy Hintzen, Ph.D. Yale University. Political sociology, social change.
Michael S. Lave, Ph.D. University of Illinois. Caribbean anthropology.
William Banks (Emeritus)
Margaret B. Wilkinson (Emeritus)

Associate Professors
Valerie A. 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.
Uta Taylor, Ph.D. University of California, Santa Barbara. American history.

Assistant Professors
Brandi Catanese, Ph.D. Stanford University. African American performance.
Ugo Nwokoji, Ph.D. University of Toronto. History

Adjunct Faculty
Robert Allen, Ph.D. (graduate adviser) Sociology, UC San Francisco.

Affiliated Professors
José A. Guadalupe, Ph.D. University of Michigan. Caribbean music studies, popular music, cultural studies, (Musicology).
Wadou W. Martin, Jr., Ph.D. University of California, Berkeley.
Raya, Ph.D., black, cultural, intellectual (History).
Mary Lovelace O’Neal, M.F.A. Columbia University. (Art History).
Tyrer E. Stoval, Ph.D. University of Wisconsin, Madison. French history (History).
Minna T. Trinh, 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 major 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 semester freshman/sophomore seminars and other courses with selected topics, consult the description of courses for the current semester available at the department office.

Major Requirements
Completion of or enrollment in the following four courses is required in order to declare the major: AAS 4A-4B, Africa: History and Culture; and AAS 5A-5B, Black Life and Culture. Students are strongly encouraged to complete the lower division requirements of their academic program.

Upon declaring the major, students are required to complete the following upper division core requirements:
AAS 100, Introduction to African American Studies
AAS 101, Interdisciplinary Research Methods

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 requirements for the minor 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 all colleges and universities attended; three letters of recommendation; two recommendation forms (sample (no more than 14 pages) that best reflects their program of study; and TOEFL scores (minimum 550 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 in Africa; a broad perspective on the African diaspora; 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. Such an approach is to be employed for the study and understanding of development and underdevelopment, domination and power, self-determination, mutual cooperation, and aesthetic and creative expression. Issues of identity construction, marginality, territoriality, and the universal role of race in the organization of political economy and in-class formation are critical to the program’s intellectual agenda.

Fields of Emphasis
The fields of emphasis are focused in two general areas representing current faculty fields of expertise:
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 courses work 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 course work 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) Hours of lecture and one hour of discussion per week. Prerequisites: Subject A and 1A. Formerly 1A. Formerly 1A. Emphasis on expository, argumentative, and other styles of writing. The assignments will focus on themes and issues in African American life and culture. First half of the Reading and Composition requirement. (F,SP) Staff

R1B. Freshman Composition. (3) Hours of lecture and one hour of discussion per week. Prerequisites: Subject A and 1A. Formerly 1B. Continued training in expository and argumentative writing, with more emphasis on literary interpretation. Satisfies the second half of the Reading and Composition requirement. (F,SP) Staff

4A. Africa: History and Culture. (3) 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

4B. Africa: History and Culture. (3) Hours of lecture and one hour of discussion per week. Emphasis on social, political, and economic change in 20th century Africa. Further emphasis on the role of modernization, urbanization, and the emergence of contemporary African states. (F,SP) Nwokeji

5A. African American Life and Culture in the United States. (3) Hours of lecture and one hour of discussion per week. Study of the international and national divisions of race as they pertain to persons of African descent, wherever they may find themselves. Such an approach is to be employed for the study and understanding of development and underdevelopment, domination and power, self-determination, mutual cooperation, and aesthetic and creative expression. Issues of identity construction, marginality, territoriality, and the universal role of race in the organization of political economy and in-class formation are critical to the program’s intellectual agenda. Applicants must have completed an undergraduate degree and should demonstrate a general knowledge of African American history and an understanding of the disciplinary bases for the study of the African diaspora. Demonstrated knowledge in the field should include understanding relations among social, economic, and political structures and culture in African American life.

*Professor of the Graduate School
†Recipient of Distinguished Teaching Award
58. 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 designed to help students understand the forces and ideas that are influencing the individual and collective African American experience. (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 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 ways in which racial and gender differences are understood 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 to think historically and constructively about questions of social change in the face of globalization. Also listed as Geography C15 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/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 and semester to semester. (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 purpose of this course is to examine the many forms that the struggle of minorities can assume. The focus is on individual struggle and its outcome as reported and perceived by the individuals themselves. Members of three minority groups are considered: African Americans, Asian Americans (so called), and Chicano/Latino Americans. The choice of these three has to do with the different histories of members of these aggregations, the public responses they have produced, and what different approaches to struggle. This course satisfies the American cultures requirement. (SP) Hintzen

28AC. Globalization and Minority American Communities. (3) Three hours of lecture per week. An examination of the processes of community development and the social environments, of institutions between minority American communities in the U.S. (African Americans, Asians, Chicano/Latino) and their cultures of origin, in the 19th and 20th centuries. (SP) Staff

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 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. (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 fifteen weeks. One and one half hours of seminar per week per unit for ten weeks. Two 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 pass/no pass basis. Sections 3-4 to be graded on a letter-grade basis. These 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. Topics vary from department to department and semester to semester. Enrollmenlimited to 15 sophomores. (F,SP)

98. Directed Group Studies for Freshmen and Sophomores. (1-4) Course may be repeated for credit. Enrollments are restricted; see the Introduction to Courses and Curricula section of this catalog. Supervised research. Must be taken on a pass/no pass basis. (F,SP)

101. Research Methods for African American Studies. (4) Three hours of lecture and one hour of laboratory per week. Prerequisites: Introductory statistics. As an introduction to interdisciplinary research methods as they are applied to the study of African American communities, the course will examine theoretical and methodological issues as they pertain to qualitative research; and sources and methods of social research and data collection. The main focus will be on qualitative methods.

107. Race and Public Policy. (3) Three hours of lecture 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

111. Race, Class, and Gender in the United States. (3) Three hours of lecture per week. Prerequisites: Upper division status. The course examines ways gender and race constructions shape the lives of African American males. Developmental in design, we examine black males in the context of childhood, adolescence, gender relations and family, and the world of work. (SP) Staff

112A. Political and Economic Development in the Third World. (4) Four hours of lecture per week. An examination of the theoretical and policy implications of Third World underdevelopment and the broad spectrum of theoretical positions put forward to explain it. Underdevelopment will be viewed from both 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 nations in their attempts at transition to modernized developed socio-political and economic systems and an examination of the international and intranational impediments to Third World development. The focus will be on empirical examples 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 discussion per week. This course will examine the origins of the African slave trade, and explore political, economic, geographic, and cultural factors shaping the 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, institutional, and protest traditions from the Civil War to the Civil Rights Movement. (SP) Taylor

119. Selected Topics in the Sociocultural Development of the Black Woman. (1-4) Course may be repeated for credit. One to four hours per week. 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: SB 121A, 121B, or 125A. (SP) Staff

124. Founders of African American Political Thought. (3) Three hours of lecture per week. Prerequisites: SB or introductory course in sociology. Examines the origins and development of black political ideologies, organizations, and movements. (SP) Staff

122. African American Families in American Society. (3) Three hours of lecture per week. Prerequisites: SB or introductory course in sociology. Examines the historical and functional roles and functions of families in the development of black people in America from slavery to the present. (SP) Staff

123. Social and Political Thought in the Diaspora. (3) Three hours of lecture per week. An examination of the 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. The thought and actions of Martin Luther King, Jr. This course examines the major events of the Civil Rights Movement. Reading includes original works by King as well as analyses of King and his legacy. Student essays are due on actual examples that represent the diversity of African American political thought. (SP) Taylor

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 understood traditionally, this period began with the United States Supreme Court decision of May 17, 1954, in the case of Brown v. Board of Education. It continued until the passage of the Voting Rights Act of 1965. This course will seek to place this movement in the context of global developments and in the context of the broad sweep of United States history. Assigned readings consist of historical texts and autobiographies. Lectures will place 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. (3) 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 present. The dominant themes of this course include family, work, community, sexuality, and individual and collective activism. Particular attention will be paid to the interplay between race, class, and gender in American society. Assigned readings consist of an intro-
duction 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, French, British, and Dutch-speaking Caribbean societies. Analysis of Caribbean social structure including the development of the plantation system, urban dynamics, ethnic politics, family structures, and ecology of African Caribbean religions. (SP) Laguerre

C132. Psychology of African American People: Cultural Perspectives. (3) Three hours of lecture per week. Prerequisites: African SB 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.

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, e-learning, the digital city, telecommuting, virtual communities, Internet time, the virtual office, and the geography of cyber space. Course will also discuss the role of information technology in the governance and economic development of society. (F,SP) Laguerre

C134. Information Technology and Society. (4) Student fee for C134 after 09/30/13. 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, e-learning, the digital city, telecommuting, virtual communities, Internet time, the virtual office, and the geography of cyber space. The course will also discuss the role of information technology in the governance and economic development of society. Also listed as American Studies C134.

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, Lebanese, Canaries, Caribbeans, and Jews during the post-emancipation period; political history; and the historical and structural evolution of Caribbean cities. (F) Laguerre

138. Black Nationalism. (4) Four hours of lecture per week. Prerequisites: SB. Examines the concept of black nationalism as a historical and intellectual development. Special attention will be given to the role of African American history 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 per unit. 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. Examines through lectures and a selection of films, the development and achievements of Third World motion picture artistry. Social, political, and cultural themes are discussed in a particular emphasis given to the works from Asia, Africa, and Latin America. Other newly developed film sources from abroad are presented for critical assessment. (F)

142B. The Cross-Cultural Images of African American Minorities in Film. (4) Three hours of lecture and two hours of viewing/discussion per week. Prerequisites: Reading and composition requirement. A critical, historical course describing the cross-cultural images of black Americans, aligned with other ethnic minorities, with attention to comparative changes in their cinematic depictions, from the silent era to the present. Important works that formed specific images of the diverse American population (including Native American, Asian, Hispanic, and other immigrant groups, recently integrated into American culture) are viewed and discussed in order of their appearance on film and history, and to recognize the struggles against prejudices and taboos. This course satisfies the American cultures requirement. (SP)

142D. Race and American Film. (4) Two hours of lecture and two hours of discussion/viewing. Prerequisites: Reading and composition requirement. This course uses film to investigate the central role of race in American culture and history. Using films as the primary texts, the course will explore the relationship between these films and political and social contexts from which they emerged. Looking at both mainstream and independent cinema, the course will chart the continuities and varieties of representations and negotiations of race. (F,SP) Raiford

C143A. Performance: An African American Perspective. (3) Three hours of lecture per week. Prerequisites: 1A or consent of instructor. Introduction to the Research-to-Performance Method. African American 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 Theater C183A.

C143B. Research-to-Performance Laboratory. (3) Three hours of lecture per week. Prerequisites: 143A or equivalent or consent of instructor. Development of scholarly material for theatrical presentation and enhancement of dramatic performance techniques through discussions, improvisations and readings of works 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 Theater C183B.

C143C. Black Theatre Workshop. (3) Course may be repeated for credit. Two 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 theatre production. Also listed as Theater C183C.

144. Introduction to Cultural Studies: Black Visual Culture. (4) Three hours of lecture per week. Prerequisites: Reading and composition requirement. This course examines the cultural, literary and social assumptions in mass media images in popular culture. The course focuses 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. Key issues to be covered in class include ideology, representation, articulation, race and gender formation. Students must have a willingness to engage new and difficult ideas. (F,SP) Raiford

C145. Gospel Chorus. (2) Course may be repeated for credit. Three hours of large ensemble and one hour of sectionals 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, which consists of both formal University music students and non-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

C146. 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, or consent of instructor. This course will cover 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 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. (SP) Clark

C151A. African American Plays from 1858 to 1959. (4) Three hours of lecture per week. Prerequisites: Reading and composition requirement. Historical survey of plays by African American writers and the portrayal of the black experience in theatre. Emphasis on predominant themes, structural tendencies, socio-historical context. Also listed as Theater C131A.

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 C131B.

C152C. African American Dramatic Literature: Forms and Styles. (3) Three hours of lecture/laboratory per week. Introduction to play analysis with emphasis on the primary theatrical form of styles chosen by African American playwrights. Emphasis on the consequences of those choices. Plays will be analyzed both as literature and as theatrical production; e.g., laboratory will include attendance at plays and performance of plays. Also listed as Theater C132.

C153A. 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 ways African American women in Western literature and African American writing. Course explores the literature of 19th-century African American women, an exploding field in American literary discourse. Also listed as 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. An introduction to Negritude and racial consciousness in the creative and political writings of French-speaking Africans and Antilleans. Includes readings in Romanilo (1926), Cesaire (1936), Ngarnek Aké (1937), and Breton (1938). Also listed as Women’s Studies C153B. (SP)

154. Negritude: French African Literature. (4) Three hours of lecture per week. Prerequisites: Reading and composition requirement. An introduction to representative works, themes, and discourse of the Caribbean literature of Negritude by authors from the Anglophone, Creoleophone, Francophone, and Hispanophone areas within plantation America. Includes examinations of indigenous folkways and nation languages as sources for the construction 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 class which introduces students to poetry as culture, history, and
criticism, politics, and practice. Focusing comparatively on poetry from three American racial/ethnic groups, this course requires students to learn both the technical structure of various forms of poetry as well as the world of contemporary poetic traditions. The groups and traditions vary from semester to semester. This course satisfies the Arts and Literature breadth requirement. This course satisfies the American cultures requirement. (F,SP)

158A. Poetry for the People: Practicum. (4) Four hours of seminar per week, plus community workshop teaching. Prerequisites: 156AC plus consent of instructor. The focus of this course is on the writing of poetry, and students undertake both the technical structure 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 edit and publish 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, plus peer teaching and performance. Prerequisites: 158A. A teaching practicum, with the regular academic supervision of the instructor, for students who completed 156AC during the previous year and 158A in the previous fall. They serve as student teacher poets for 156AC. The focus of 158B is on the teaching and performance aspect of student poet responsibility for a group of seven to ten students, and, under the direct supervision of the instructor, helps the students in 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 per week. An introduction to writings by African authors from the Anglophone, Francophone, and Lusophone regions of colonized Africa. The course sets the readings within the contexts of their articulation from the 1930s through 1980s, from dependence through neo-colonialism to post-colonial writing. Clark

161. African Theater. (4) Three hours of lecture per week. Prerequisites: Consent of instructor. The course introduces readers to dramatic texts produced in various African countries—namely, contemporary works by Merle Dandie, and Rosario Ferre. (F,SP) Clark

162. Caribbean Literature by Women Authors: Marassa. (4) Three hours of lecture per week. This course in literary theory uses concepts of twinning in the production of African Diaspora discourse as a means of addressing various binaries such as woman/men, white/black, and other oppositions. Topics to be examined: slavery, escape narratives, theMasun, and the arts of decolonization. (F,SP) Clark

163. African Literature by Women. (4) Three hours of lecture per week. Prerequisites: Reading and composition requirement. An introduction to writing by women authors from East, Southern, West Africa, and the Maghreb. From oral traditions, early settlers narrations, and 20th-century significant themes and discourses, such as polynomy, bride price, motherhood, the veil, apartheid, novels of formation, and narratives. (SP) Clark

180AC. 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 is 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 course. Students must be enrolled at the beginning of each semester. This course satisfies the American cultures requirement. (F,SP) Staff

195A-H195B. Senior Honors Thesis. (3.3) Regular individual meetings with faculty sponsor. Credit and grade to be awarded on completion of sequence. Prerequisites: 3.3 GPA overall and major. The student will complete a primary research and writing project based on study of an advanced topic with faculty sponsor. Satisfies department thesis requirement. Application and details at departmental 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 to the doctoral degree candidate. Each semester, the student will complete a primary research and writing project based on study of an advanced topic with faculty sponsor. Satisfies department thesis requirement. Application and details at departmental office. Students must enroll for both semesters of the sequence. (F,SP) Staff

198. Directed Group Studies for Undergraduates. (1-4) Course may be repeated for credit. Enrollment is restricted; see the Introduction to Courses and Curriculum section of this catalog. Must be taken on a pass/failed basis. Supervised field work in off-campus organizations. Regular individual meetings with faculty sponsor. (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 Curriculum section of this catalog. Must be taken on a pass/failed basis. Supervised research on a specific topic. (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. (SP) Small

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

214. Special Topics in African American Studies. (4) Four hours of seminar per week. A review of competing epistemologies in qualitative research of African Americans. (SP) Small

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

250. Black Intellectuals: Social and Cultural Roles. (4) Three hours of seminar per week. The course will examine the development of the African American intellectual in the African American life from the 18th century to the present. Implicit in the examination is consideration of the social and cultural roles, writers, scholars, artists, and other thinkers have played in African American literature. (SP) Staff

251. African American Women’s History. (4) Three hours of seminar per week. The objective of this course is to examine substantive issues in the African American woman’s history to the present. The dominant themes of this course include family, work, community, sexuality, and individual and collective activism. (F) Taylor

253A. Public Policy Analysis: Race and Culture in Domestic Policy. (4) Three hours of seminar per week. This course will use the issues of full employ-
Agricultural and Environmental Chemistry
(College of Natural Resources)

Office: 111C Koshland Hall, (510) 642-5167
Chair: Bob Buchanan, Ph.D.
Graduate Adviser: Anastasios Melis, Ph.D.

Professors
Leonard F. Beldjedane, Ph.D. (Nutritional Sciences)
Bob B. Buchanan, Ph.D. (Plant and Microbial Biology)
John E. Casida, Ph.D. (Environmental Science, Policy, and Management)
Benito O. de Lumen, Ph.D. (Nutritional Sciences)
Harvey E. Doner, Ph.D. (Environmental Science, Policy, and Management)
Robert Fischer, Ph.D. (Plant and Microbial Biology)
Sharon E. Fleming, Ph.D. (Nutritional Sciences)
Isao Kudo, Ph.D. (Environmental Science, Policy, and Management)
Sheng Luan, Ph.D. (Plant and Microbial Biology)
John G. McColl, Ph.D. (Environmental Science, Policy, and Management)

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

Program Overview
This graduate program is administered by an interdepartmental group 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, physics, and mathematics 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. Graduate 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 Sciences; 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

Agricultural and Resource Economics
(College of Natural Resources)

Department Office: 207 Giannini Hall, (510) 642-3345
http://cnr.berkeley.edu/indices.php
Chair: Jeffrey Perloff, Ph.D.
Professors
Peter Berck, Ph.D. Massachusetts Institute of Technology.
Natural resources, applied microeconomics
Alain de Janvry, Ph.D. University of California, Berkeley.
International rural economic development
Anthony C. Fisher, Ph.D. Columbia University.
Natural resources and environmental public economics, micro-economic theory
J. Keith Gillies, Ph.D. University of Wisconsin, Madison.
Forest economics and management
W. Michael Hanemann, Ph.D. Harvard University.
Resource economics, applied microeconomics
Ann E. Harrison, Ph.D. Princeton University.
International trade policy
Guido Imbens, Ph.D. Brown University.
Theoretical and applied econometrics
Larry S. Kapf, Ph.D. University of California, Davis.
International trade
Jeffrey Laffont, Ph.D. University of California, Berkeley.
Agricultural policy, econometrics
Richard B. Norgaard, Ph.D. University of Chicago.
Resource and environmental economics
Jeffrey Perloff, Ph.D. Massachusetts Institute of Technology.
Labor, industrial organization
Gordon C. Rausser (Robert Gordon Sproul Chair in Agricultural and Resource Economics) (Emeritus) University of California, Davis.
Agriculture and resource policy
Jeffrey M. Romm, Ph.D. Cornell University.
Forest, land and water policy
Elizabeth Sadoulet, Ph.D. University of Geneva.
International economic development
David L. Sunding, Ph.D. University of California, Berkeley.
Agricultural and natural resource policy, law and economics, welfare analysis
Brian D. Wright, Ph.D. Harvard University.
Agriculture and resource policy
David Zilberman, Ph.D. University of California, Berkeley.
Resource and quantitative policy
*Irma Adelman, Ph.D. (Emeritus) University of California, Berkeley.
International rural economic development
*George Judge, Ph.D. (Emeritus) Iowa State University.
Econometrics

Associate Professors
Jean O. Lanjouw, Ph.D. London School of Economics.
Domestic and international property rights, welfare analysis
Ethan Ligon, Ph.D. University of Chicago.
Rural development, information and uncertainty

Assistant Professors
Maximilian Aufhammer, Ph.D. University of California, San Diego.
Environmental and resource economics, econometrics
Sotiris B. Villas-Boas, Ph.D. University of California, Berkeley.
Industrial organization, applied econometrics

Adjunct Professors
Leo K. Simon, Ph.D. Princeton University.
Econometrics, policy
Arnold Zettler, Ph.D. University of California, Berkeley.
Econometrics

Adviser: Gail Vawter, 203 Giannini Hall, (510) 642-3347.

Undergraduate Program
Choice of College
Students can complete a major in environmental economics and policy in either the College of Letters and Science for a Bachelor of Arts (B.A.) degree or the College of Natural Resources for a Bachelor of Science (B.S.) degree. Major and breadth requirements are identical 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 requirement 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 (ENVECON) offers an opportunity to explore those aspects 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 wa-
ter, 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 core 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 issues in an effective and practical manner. It can also be excellent preparation for business school. Students who graduate from the major are prepared to undertake roles in public or private agencies or 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 courses in calculus (equivalent to Mathematics 16A-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 http://are.berkeley.edu/mason/eep.

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 should apply for departmental 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 strongly urged to complete the major requirements for the master's degree even if they do not plan to continue beyond that level. It is possible, in some cases, for a student to be awarded the Ph.D. degree while holding a degree (not necessarily in agricultural economics) comparable to a bachelor's degree at the University of California and have demonstrated strong scholarship potential.

The agricultural and resource economics program is relatively broad; however, each program stresses economic theory, quantitative methods, and two elective fields defined in consultation with the graduate adviser. Some common elective fields include agriculture in economic development, agricultural policy, natural resource economics, markets and international trade.

The first year of course work in the Ph.D. program is normally devoted to economic theory and quantitative methods, after which the student writes a departmental preliminary examinations in each of these areas. A second level of sophistication expected in these preliminary examinations is defined with reference to a specific set of courses, and most students are advised to take these courses.

Outstanding facilities are available within the department, including the Giannini Foundation Agricultural Economics Library, one of the world's foremost research libraries of its type.

Environmental Economics and Policy

Lower Division Courses

C1. Introduction to Environmental Economics and Policy. (4) Students will receive 2 units of credit for C1 after taking Economics 1. Three hours of lecture and one hour of discussion per week. Prerequisites: Statistics 2 or equivalent. In order to approach resource-related issues in an effective and practical manner. It can also be excellent preparation for business school.

24. Freshman Seminar. (1) Course may be repeated for credit with different topics. Topics include the lecture, assignment, and writing. Prerequisites: Three hours of lecture 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)

39. Freshman/Sophomore Seminar. Course may be repeated for credit as topic varies. Three hours of lecture 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. Prerequisites: Prior seminar requirement and sophomore Econometrics 32. Introduction to microeconomics with emphasis on resource, agricultural, and environmental issues. Also listed as Economics C3. (F,SP) Staff

40. Sophomore Seminar. (1) Course may be repeated for credit as different topic is defined. Three hours of lecture 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. Prerequisites: Consent of instructor. 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)

48. Sophomore Seminar. (1) Course may be repeated for credit as topic varies. Three hours of lecture 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. Prerequisites: Prior seminar requirement and sophomore Econometrics 32. Introduction to microeconomics with emphasis on resource, agricultural, and environmental issues. Also listed as Economics C3. (F,SP) Staff

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 strongly urged to complete the major requirements for the master's degree even if they do not plan to continue beyond that level. It is possible, in some cases, for a student to be awarded the Ph.D. degree while holding a degree (not necessarily in agricultural economics) comparable to a bachelor's degree at the University of California and have demonstrated strong scholarship potential.

The agricultural and resource economics program is relatively broad; however, each program stresses economic theory, quantitative methods, and two elective fields defined in consultation with the graduate adviser. Some common elective fields include agriculture in economic development, agricultural policy, natural resource economics, markets and international trade.

The first year of course work in the Ph.D. program is normally devoted to economic theory and quantitative methods, after which the student writes a departmental preliminary examinations in each of these areas. A second level of sophistication expected in these preliminary examinations is defined with reference to a specific set of courses, and most students are advised to take these courses.

Outstanding facilities are available within the department, including the Giannini Foundation Agricultural Economics Library, one of the world's foremost research libraries of its type.

Environmental Economics and Policy

Lower Division Courses

C1. Introduction to Environmental Economics and Policy. (4) Students will receive 2 units of credit for C1 after taking Economics 1. Three hours of lecture and one hour of discussion per week. Prerequisites: 100, or Economics 100A or 100B. Introduction to the economics of natural resources. Land and the concept of economic rent. Models of optimal depletion of nonrenewable resources and the value of renewable resources. Application to energy, forests, fisheries, water, and climate change. Resources, growth, and sustainability. Also listed as Economics C102. (F,SP) Staff

C115. Modeling and Management of Biological Resources. (4) Three hours of lecture and three hours of computer laboratory per week. Prerequisites: Two semesters of calculus and consent of instructor. Models of population growth, chaos, life tables, and Leslie Matrix. Harvesting and exploitation theory. Methods for analyzing population interactions, predation, competition. Fisheries, forest stands, and insect pest management. Genetic aspects of population management. Mathematical theory based on simple difference and ordinary differential equations. Use of simulation packages on microcomputers (previous experience with computers not required). Also listed as Environ Sci, Policy, and Management C104. (F) Getz

C116. Introductory Applied Econometrics. (4) 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 strategy. Regression analysis with cross-sectional and time-series data; economic applications; interpretation of results; presentation 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, agricultural, and international development economics. Students learn the use of a statistical software for economic data analysis. Also listed as International and Area Studies C116. (F) Sadoulet

131. Globalization and the Natural Environment. (3) Three hours of lecture per week. Prerequisites: 100, or Economics 100A or 101A. Upper division to department to department and semester to semester. En-...
velopment strategy. Also listed as Economics C171.

(3) 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. This course discusses recent efforts to understand and apply tools and theories of international trade and development economics, with particular attention paid to the importance of research, Economic analysis of savings, consumption, insurance, production, trade, welfare distribution of vignettes, and evolutions in developing countries. Roughly equal parts of theory, evidence, and policy. (SP)

153. Population, Environment, and Development. (3) Two hours of lecture and one hour of discussion per week. Prerequisites: Intermediate microeconomic theory and consent of instructor. This course takes a multidisciplinary approach to the complex interactions between population, environmental, and economic development, including the leading theories for understanding these interactions. The origins and history of current debates are discussed as well as some of the major issues stemming from these debates, such as immigration, international trade, family planning policies and concerns over the global commons. Specific natural resources and services like fresh water, food supply, and forest cover are analyzed as case studies. Policies and combinations for sustainable development are discussed. (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 Economics 101A; 101 recommended. Urban demand for water; water supply and economic growth; water utility economics; irrigation demand; large water projects; economic impacts of surface water law and institutions; economics of salinity and drainage; economics of groundwater management. (SP) Zilberman

C180. Ecological Economics in Historical Context. (3) Three hours of lecture and one hour of discussion per week. Prerequisites: Economics 100A or equivalent or consent of instructor. This course takes a historical view of how history have explored economic and environmental interactions, physical limits to growth, what constitutes the good life, and how economic justice can be assured. Yet economists continue to develop theories of growth and models that simplify the environment and promote bad outcomes. Ecological economics responds to this tension between the desire for simplicity and the multiple perspectives needed to understand complex systems, toward sustainability, fulfilling, just economies. Also listed as Energy and Resources Group C180. (SP) Norgaard

195. Senior Thesis. (4) Course may be repeated for credit. Individual meetings with faculty sponsor. Prerequisite: Senior standing in Environmental Economics major 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 supervisor. Prerequisites: Upper division honors research specific to aspects of 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 pass/no pass 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 meetings. Must be taken on a pass/no pass basis. Prerequisites: Consent of instructor. Group study of selected topics or topics in Environmental Economics and Policy. (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 meetings. Must be taken on a pass/no pass 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. Theoretical and empirical analyses of poverty, energy, and inequality, household and community behavior, alternative frameworks are used to evaluate various types of policy reform. (SP) Auffhammer, Sadoulet

202. Issues and Concepts in Agricultural Economics. (4) Three hours of lecture and one hour of discussion per week. Prerequisites: Economics 201A-201B or consent of instructor. History, institutions, and policies affecting agriculture markets and environmental quality. Producer behavior over time and under uncertainty. Asset futility and aggregate supply models. (SP)

210. Probability and Statistics. (3) Three hours of lecture per week. Prerequisites: Graduate standing or consent of instructor. This is an introduction to probability theory and statistical inference. It is primarily intended to prepare students for the graduate econometric analyses courses 212 and 213. The emphasis of the course is on the principles of statistical reasoning. Probability theory will be discussed mainly as a background for statistical theory and specific models will, for the most part, be considered only to illustrate the general statistical theory as it is developed. (F) LaFrance, Zilberman

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 entering graduate students with the basic skills required to perform graduate research. Students will learn as professional economists. The lectures place heavy emphasis on intuition, graphical representations, and conceptual understanding. Weekly problem sets provide practice with both theoretical 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 economic models. Includes analysis of the general linear model, asymptotic 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 three hours of computer laboratory per week. Prerequisites: 211 and 212 or equivalent or consent of instructor. Standard and advanced econometric techniques are applied to real data. Emphasis is on concepts, principles, and interpretation of results. Computer applications are emphasized. Techniques include limited dependent variables, time series analysis, and nonparametric analysis. 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. Theory and application of new and emerging approaches to estimation and inference. Emphasis will be on maximum likelihood applications to economic problems will be emphasized. Students will use computers to conduct statistical analyses. (SP)

219A-219B. Econometric Project Workshop. (2,2) Two hours of seminar per week. 219A must be taken on a satisfactory/unsatisfactory basis; 219B 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 addressing research questions with existing literature. With faculty guidance, students prepare appropriate econometric projects, present project results to provide comments on other student projects, and complete projects in response to faculty and student comments. (F,SP) Auffhammer, Sadoulet


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 criticism of ongoing research by faculty, staff, and students. Not necessarily offered every semester. (F,SP) Auffhammer, Sadoulet

241. Economic Analysis 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 201A-201B, or consent of instructor. This course covers alternative production, risk management; family production function; adoption and diffusion; innovation and intellectual property rights; agricultural and environmental policies and their impact on the current 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. Prerequisites: 211 or consent of instruction. Production, procurement behavior, rent seeking, social waste, and their trade-offs with the provision of growth-promoting public goods. Three failure types are distinguished: market, government, and organizational failure. 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)

248. 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. Presentation and criticism of ongoing research by faculty, staff, and students. Not necessarily offered every semester. (F,SP)

251. 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 development.
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 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, economic, 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 Public Policy C253. (F) De Janvy, Sadoulet, Zilberman

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 criticism 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 renewable and nonrenewable natural resource use, with applications to forests, fisheries, energy, and climate change. Resources, growth, and sustainability. Economic theory of environmental policy. Externalities, the Coasian critique; tax incidence and anomalies; indirect taxes; the double dividend; environmental standards; environmental regulation; impact of uncertainty on taxes 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; averting 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) Two hours of lecture and two hours of discussion 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 used to study discrete time stochastic and deterministic dynamic 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 criticism of ongoing research in Ph.D. level economy, 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 student researcher appointment. Individual training for graduate students in 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)

American Studies

(College of Letters and Science)

Group Major Office: Division of Undergraduate and Interdisciplinary Studies, 301 Campbell, (510) 642-9230

http://is.berkeley.edu/

Director: Richard Hutson, Ph.D.

Faculty Advisers: A list of faculty advisers is available in the major office or on the web site.

Affiliated Faculty

Charles Atieni (English) Dorothy Beam (English) Mark Silliman (American Studies/History) Richard Candia Smith (History) Diane Clemens (History) Robin L. Einhorn (History) Sally Fairfax (Environmental Science, Policy, and Management)

Claude S. Fischer (Sociology) Marcial Gonzales (English) Paul Groth (Architecture) Dorothy Hale (English) Bob Hass (English) David Henkin (History) David Hollinger (American Studies) Richard Hutson (English) David Kip (Public Policy) Kerwin Kinne (History) Michel S. Laguerre (African American Studies) Thomas C. Leonard (Journalism)

Ron Leeworthy (English) Margaretta Lovell (Art History) Colleen Ly (English) Waido Martin (History) Mary Ann Mason (Social Welfare) Joe McBride (Environmental Science, Policy, and Management)

Donald McCauley (English) Carolyn Merchant (Environmental Science, Policy, and Management) Kathleen Moran (American Studies) Louise Mozingo (Landscape Architecture) Christopher Nealon (English) Samuel Otter (English) Genaro Padilla (English) Christine Palmer (American Studies) Carolyn Porter (English) Joan Rezinger (Arts Management) Christine Rosen (Business) Jose Sakdavar (Ethnic Studies) Scott Saul (English) Susan M. Schweik (English) Katherine Snyder (English) Shannon Steen (Theater Studies) Arin Swidler (Sociology) Gerald Vareen (Native American Studies) Kim Voss (Sociology) Bryan Waggoner (Management) Richard Walker (Geography) Ling-chi Wang (Asian American Studies)

hertha Wong (English)

Group Major in American Studies

Established in fall 1993, the American studies major offers students the opportunity to study American society using a broad range of methods drawn from a wide variety of disciplines in the College of Letters and Science and the professional schools and colleges. “American society” refers primarily to the geographical regions of the United States, from colonial times to the contemporary period, but recognizes that political, cultural, and economic patterns do not stop at national borders. Therefore, American studies courses will attempt to see this larger world system and attempt to account how the cultures of America have been continually reshaped by movements of people, commerce, and ideas which cross borders. As an interdisciplinary program, American studies draws on faculty resources and research in history, literature, economics, architecture, material culture, media studies, ethnic studies, and urban and regional studies.

Prerequisites to the Major

In order to declare the major, students must complete American Studies 10, plus two of the three other lower division requirements before their Petition to Declare can be accepted.

Lower Division Requirements

A minimum grade of “C” is required in all lower division courses from any one department for the major. Lower division requirements consist 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 lower division courses approved to fulfill this requirement.

Lower Division Course List:

American Am Studies 5A, 5B, 17AC, 27AC; Agricultural and Resource Economics 1; American Studies 39, Anthropology 2, 10AC, 11AC, Art 8; Asian Am Studies 2A, 2B, 20A, 20B, 20C; UGSSA 10; Chicano Studies 20, 30, 40, 50, 70, 80; Comparative Lit 60AC; Education 40AC; English 31AC, 33, 37; Environ Design 4; ESPDM 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, 18A, 17A, 30B; IDS 1; ISF 60, 61; Linguistics 15AC, 20AC; Literature 6AC, 16AC, 25A; Music 26AC; Native Am Studies 20A, 20B, 20C; Pol Sci 33; Psych 14; Public Health 14; Rhetoric 40AC, 41AC; Sociology 1, 3, 5AC, 5; Theater, 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 series, “Examining U.S. Cultures in Time” and “Examining U.S. Cultures in Place.” See department listings for available courses every semester.

2. Area of Concentration. At least 20 units of upper division course work 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
Sophomore seminars are small interactive courses of passed/not passed basis. Sections 3-4 to be graded on a letter-grade per week per unit for five weeks. Sections 1-2 to be graded on a letter-grade per week per unit for 10 weeks. Two hours of seminar per week per unit for fifteen weeks. One and one half hours of seminar per week per unit for eight weeks.

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 hours of lecture and one hour of discussion per week. Formerly Undergraduate Interdisciplinary Studies 10. American culture and cultural change, with attention to the multicultural basis of American society and emphasis on the need for multiple methods of analysis. The course will consistently draw on the arts, material culture, and various fields affecting cultural production and meaning. Those areas include literature, film, history, architecture, history of art, religion, music, engineering, environmental studies, anthropology, politics, economics, law, and medicine. 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. Sections 1-2 to be graded on a letter-grade basis. Sections 3-4 to be graded on a passed/not passed basis. Formerly Freshman Seminar Program. This course is designed to provide new students with the opportunity to explore an intellectual topic with a faculty member in a smaller 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.

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. Formerly Freshman/Sophomore Seminar Program. This course may be repeated for credit as topic varies. Three hours of lecture per week. The course is designed primarily to allow faculty to develop focused interdisciplinary courses which address specific issues, themes, or problems in American society and American cultures. Topics vary from semester to semester. This course satisfies the American cultures requirement.

Upper Division Courses

101. Examining U.S. Cultures in Time. (4) Three hours of lecture per week. This course examines how U.S. cultures are constructed, reinforced, and changed, and how those cultures act simultaneously at a given time. To help students develop skills in cultural analysis, lectures will contrast various methods and perspectives as they apply to the study of a particular year or decade. Topics will vary from semester to semester. This course satisfies the American cultures requirement.

101AC. Examining U.S. Cultures in Time. (4) Course may be repeated for credit as topic varies. Three hours of lecture per week. This course examines how U.S. cultures are constructed, reinforced, and changed, and how those cultures act simultaneously at a given time. To help students develop skills in cultural analysis, lectures will contrast various methods and perspectives as they apply to the study of a particular year or decade. Topics will vary from semester to semester. This course satisfies the American cultures requirement.

102. Examining U.S. Cultures in Place. (4) Course may be repeated for credit as topic varies. Three hours of lecture per week. This course examines how U.S. cultures are constructed, reinforced, and changed, and how those cultures act simultaneously at a given time. To help students develop skills in cultural analysis, lectures will contrast various methods and perspectives as they apply to the study of a particular year or decade. Topics will vary from semester to semester. This course satisfies the American cultures requirement.

102AC. Examining U.S. Cultures in Place. (4) Course may be repeated for credit as topic varies. Three hours of lecture per week. This course examines how U.S. cultures are constructed, reinforced, and changed, and how those cultures act simultaneously at a given time. To help students develop skills in cultural analysis, lectures will contrast various methods and perspectives as they apply to the study of a particular year or decade. Topics will vary from semester to semester. This course satisfies the American cultures requirement.

110. Special Topics in American Studies. (3,4) Course may be repeated for credit as topic varies. Three hours of seminar per week. Pre-requisite: Permission of instructor. This course is designed to introduce honors students (those who have achieved a minimum overall GPA of 3.3) to the history and theory of American studies as an interdisciplinary field and to explore current themes, debates, and research problems in American studies.

110AC. Special Topics in American Studies—American Cultures. (3,4) Course may be repeated for credit as topic varies. Three or four hours of lecture per week. This course is designed primarily to allow faculty to develop focused interdisciplinary courses which address specific issues, themes, or problems in American society and American cultures. Topics vary from semester to semester. This course satisfies the American cultures requirement.

111E. Topics in American Studies. (4) Course may be repeated for credit as topic varies. Three or four hours of lecture per week. This course is designed primarily to allow faculty to develop focused interdisciplinary courses which address specific issues, themes, or problems in American society and American cultures. Topics vary from semester to semester. This course satisfies the American cultures requirement.

111F. Cultures of U.S. Imperialism: Spanish-American War of 1898. (4) Three hours of lecture and one hour of discussion per week. Formerly Africana American Studies 134. This survey course explores the histories and narratives of the Spanish-American War of 1898. Did the war initiate new kinds of affiliations when the U.S. invaded Cuba and the Philippines? This course is designed primarily to allow faculty to develop focused interdisciplinary courses which address specific issues, themes, or problems in American society and American cultures. Topics vary from semester to semester. This course satisfies the American cultures requirement. Also listed as Ethnic Studies C173. (F) Staff

112A. American Cultural Landscapes, 1600 to 1900. (4) Three hours of lecture and one hour of discussion per week. Formerly History C174A. This course explores the 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. En- courages 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 C160A. (F) Groth

112B. American Cultural Landscapes, 1900 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—houses, highways, farms, factories, stores, recreation areas, small towns, city districts, and regions. En- courages 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 C169B and Geography C160B. (SP) Groth

112F. The American Forest: Its Ecology, History, and Representation. (4) Three hours of lecture and one hour of discussion per week. Formerly History C176. 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 Undergraduate Interdisciplinary Studies C136, History of Art C189, and Environ Sci, Policy, and Management C191. (F,SP) Lovell, McBride

132B. 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.

134. Information Technology and Society. (4) Students will receive no credit for C134 after taking African American Studies 134. 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 cyber space. The course will also discuss the role of information technology in the governance
and economic development of society. Also listed as African American Studies C134. (F,SP)
C152. Native American Literature. (4) Three hours of lecture per week. Prerequisites: 151 is recommended but not required. An analysis of the written and oral tradition developed by Native Americans. Emphasis will be placed on approaches (archaeo-

graphic, psychological, historical, and cultural) in examining American Indian literature. Also listed as Na-

tive American Studies C152.
C160. International Media. (3) Course may be re-

peated 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, or new media. Possible topics: Political and cultural media in China, and Palestinian media. Also listed as Interdisciplinary Studies 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 in four realms: 1) urban open spaces—that is squares, plazas, parks, and recreation systems; 2) urban and suburban design; 3) regional and environ-

mental design for 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 public parks movement, as well as an array of landscape precepts, environmental con-

cerns, horticultural practices, and technological inno-

vations of American landscapes. Students will com-

plete a midterm, final, and a research assignment. Also listed as Environmental Design Architecture C171. (SP) Mozingo.
C172. Business in its Historical Environment. (3) Three hours of lecture per week. This course will ex-

amine selected aspects of the history of American business. Included will be discussions of the evolution of the large corporation, the development of modern management techniques, and the changing relationship of business, government, and labor. Also listed as Un-

dergraduate Business Administration C172. (F,SP) Rosen.
C173. Cultures of U.S. Imperialism: Spanish-American-

War of 1898. (4) Three hours of lecture and one hour of discussion per week. This survey course ex-

plains the histories and narratives of the Spanish-

American War of 1898. Did the war initiate new kinds of affiliations when the U.S. invaded Cuba, Puerto Rico, and the Philippines? Readings by Turner, An-

zaldua, Roosevelt, Marti, Retamar, Montejo, and Perez, among others. Also listed as Ethnic Studies C173. (F)
C174. Visual Autobiography. (4) Six hours of lecture per week. Prerequisites: Consent of instructor. Since visual autobiography has 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 autobi-

ography.” 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 tex-
tual/visual literacy. Also listed as Visual Studies C185A, Undergraduate Interdisciplinary Studies C135, and English C143V. This course satisfies the American cul-
ture requirement.
C177. Journalistic Perspectives on American Cul-

ture. (3) Three hours of lecture per week. Journalistic perspectives on American culture is the study of fame as defined by the dominant media in this society. Stu-

dents will examine both primary and secondary sources to study the reputations of individuals have been built and torn down.
C178B. Vernacular Architecture. (3) Three hours of lecture per week. Prerequisites: Architecture 170A-

170B. This course will introduce you to a variety of North American vernacular building traditions, to help you understand who are not trained as architects design and build, how buildings and landscapes are used, and what they mean to their builders and users. Topics to be explored include rural and urban house types, vernacular building sys-
tems, commercial architecture, the public landscape, and the vernacular landscapes of work and of religion, focusing on European, African, and Native American traditions that shaped the most familiar and widespread folk architecture in the American landscapes of 19th- and 20th-century immigrants. We will look at built environments as expressions of ethnic and racial identities, organizers of social life, and con-
scious works of art. Also listed as Architecture C174B.

This course satisfies the American cultures require-

ment.
190. Senior Thesis. (4) Individual meeting with thesis adviser. All American Studies majors must satisfy the senior thesis requirement. Three options are available: AS 190—Senior-thesis seminar; or AS 190—Senior-Seminar; or AS 190—Senior-Seminars. In order to enroll in AS 190, a student must complete the "Thesis Proposal/Advisor Agreement" (available in the departmental office) prior to the semester in which the thesis is written. (F,SP) Staff
191. Senior Seminar. (4) Four hours of seminar per week. Prerequisites: Declared majors with senior standing. Students will meet in seminar and will be re-

quired to write individual research papers based on the general themes or issues of the seminar. The partic-
ular thematic issues will be outlined on the American Studies Course List provided each semester by the American Studies office. (F,SP) Staff
H195. Honors Thesis. (4) Three hours of seminar per week. Prerequisites: Senior-standing major in Ameri-

can studies; completion of 101 and 102, 3.50 overall GPA, 3.75 average in major. This is a required course for students wishing to graduate with honors in American studies. Entails writing a bachelor’s thesis pertaining to the student’s individual area of con-

centration within the American studies major. The com-

pleted thesis will be read by the thesis supervisor and one other faculty member. (F,SP) Staff
198. Directed Group Study for Advanced Under-

graduates. (1-4) Course may be repeated for credit as topic varies. Enrollment is restricted; see the Intro-

duction to Courses and Curricula section of this cata-

log. Must be taken on a passed/not passed basis. Pr-

erequisites: Regulations set by College of Letters and Science. Seminars for the group study of selected top-

ics not covered by regularly scheduled courses. Top-

cis will vary from semester to semester. Students must have completed 60 units in order to be eligible to en-

roll. (F,SP) Staff
199. Supervised Independent Study and Research for Upper Division Majors. (1-4) Course may be re-

peated for credit as texts 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; see the Intro-

duction to Courses and Curricula section of this cata-

log. (F,SP) Staff
Ancient History and Mediterranean Archaeology

(College of Letters and Science)

Group Major Office: 7233 Dwinelle Hall, (510) 643-8741

http://fs.berkeley.edu/Dept/AHMA/

Professors

Daniel Boyarin, Ph.D., Jewish Theological Seminary, Rabbinic literature, Talmudic culture

Stanley H. Brandler, Ph.D., University of California, Berkeley, Mediterranean ethnology and folklore

David J. Cohen, Ph.D., Cambridge University, University of California, Los Angeles, Ancient Near Eastern, Classical Greek law, political and legal theory

Crawford H. Greenewalt, Jr., Ph.D., University of Pennsylvania, Classical Archaeology

Erich S. Gruen, Ph.D., Harvard University, Roman and Hellenistic history

Ronald Hendel, Ph.D., Harvard University, Hebrew Bible

J. E. Huebler, Ph.D., Harvard University, Licensee Sacred Scripture, Pontifical Biblical Institute, Rome

Hebrew, Old Testament, Syro-Palestinian archaeology

Robert C. Knapp, Ph.D., University of Pennsylvania, Roman history, Latin historical authors and epigraphy

Leslie V. Kurke, Ph.D. Princeton University, Greek literature, Latin late antiquity, and legal history

Stephan G. Miller (Emeritus), Ph.D. Princeton University, Classical archaeology

Martin Schwartz, Ph.D., University of California, Berkeley, Iranian studies

Andrew F. Stewart, Ph.D. Cambridge University, Greek and Roman art and architecture

David B. Stronach (Emeritus), M.A. Cambridge University. Near Eastern Archaeology

Ronald S. Stroud, Ph.D, University of California, Berkeley, Greek literature and epigraphy

Ruth E. Tinghram, Ph.D. University of Edinburgh, Old World archaeology, prehistoric archaeology

John R. Anderson (Emeritus), M.A., F.S.A. Oxford University, Greek and Roman archaeology

Guluy P. Bursali (Emeritus), Ph.D. University of California, Berkeley. Near Eastern art history

Wolfgang J. Heimelt (Emeritus), Ph.D. Heidelberg University, Semitic languages, Mesopotamian history

Ann A. McLintock (Emeritus), University of Pennsylvania, Assyriology, ancient Near Eastern history

Jacob Migrom (Emeritus), D.H.L. Jewish Theological Seminary, Biblical religion, history of ancient Israel

W. Kendrick Pritchett (Emeritus), Ph.D. Johns Hopkins University, Greek epigraphy, topography and history

Raphael Segal (Emeritus), M.A. Oxford University, Greek history, Greek law

John M. Smith, Jr. (Emeritus), Ph.D, Columbia University, Inner Asian history, numismatics, military history

Ruben Stefanini (Emeritus), Doctorate in Letters, University of Florence, Hittite, hieroglyphic Luwian, Anatolian studies

Leslie L. Thraete (Emeritus), Ph.D., D.D., Harvard University, Greek and Latin linguistics, Greek epigraphy

Associate Professors

Susannah Elm, D.Phil. Oxford University, History of late antiquity, early Christianity

Christopher Halliatt, Ph.D. University of California, Berkeley, Roman art and material culture

Cathleen Keller, Ph.D. University of California, Berkeley, Egyptian language, history, and art

Carol A. Redmount, Ph.D. University of Chicago, Egyptian archaeology and archaeology of the Southern Levant

Assistant Professors

Marian Feldman, Ph.D. Harvard University, Bronze Age Aegean and Near Eastern art and archaeology

Todd Hickey, Ph.D. University of Chicago, Greek and Egyptian papyrology, social and economic history, Late Antiquity

Lecturer

David Larkin, Ph.D. University of Chicago, Egyptology

Affiliated Professor

Victor R. Gold, Ph. D. Semitic languages, Syro-Palestinian history and archaeology

Senior Staff

Frank Asaro (Emeritus), Ph.D. University of California, Berkeley, Provenance determination of archaeological artifacts

The Major

There is no undergraduate major.

The Graduate Program

The Ancient History and Mediterranean Archaeology program is interdisciplinary and is adminis-

ted by a faculty group drawn from different depart-

ments. Both M.A. and Ph.D. degrees are offered. Fields of emphasis include Classical, Near Eastern, ancient Egyptian, and Late Antique his-

tory, religion, art and archaeology; epigraphy; num-

ismatics; and ancient law. Candidates for de-

grees 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 com-

pleted at least one year of undergraduate study in ancient history, art, or archaeology. Applicants should have had sufficient training to undertake ad-

vanced work in at least one ancient language.

M.A. Requirements.

The M.A. by thesis requires 20 semester units of course work and a thesis. The M.A. by examination requires 24 semester units of course work and a comprehensive examination in two of the major fields. M.A. can-

didates 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 com-
pletion 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. It is expected that all students will
take at least one AHMA interdisciplinary seminar
during their graduate years. Students should also
take considerable seminar work in at least two of
the departments to expose students to the program and
obtain some practical experience in archaeology.
Candidates must pass examinations in two modern
languages and two ancient languages appropriate
to their research. They are then eligible for the Ph.D.
qualifying examinations, both written and oral,
which test competence in the major and minor
subjects. Upon successful completion of these re-
quirements and when advanced to candidacy, the
student proceeds to research and writing of a dis-
tertation under the guidance of at least a three-person
committee. The dissertation must be approved by the
committee and be in a final form before the stu-
dent is recommended for the Ph.D. degree.

For further information, inquiries should be ad-
ressed to the Graduate Group in Ancient History
and Mediterranean Archaeology.

Graduate Courses

210. Ancient History and Mediterranean Archae-
ology 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 to expose students to a discipline other than
their own, but to engage them directly in the applica-
tion of that discipline to their own research interests.
The topic and instructors will vary from year to year.
Staff

280. Special Studies. (4) Course may be repeated
for credit. Three hours of seminar per week. Special
studied in topics relating to the ancient history and
archaeology of the Mediterranean world. Instruction in ar-
eas not covered by regularly scheduled courses taught
by Ancient History and Mediterranean Archaeology
faculty. May be taught by AHMA or visiting faculty.
(FSP) Staff

289. Special Study. (1-4) Course may be repeated
for credit. Four hours of independent study per week
per unit, including consultation. Prerequisites: Graduate
standing. Contact an instructor. Topics and instruc-
tors will vary from year to year. Special individual
study for qualified graduate students. Individual study and re-
search, including archaeological fieldwork or laboratory
projects, in consultation with an instructor on sub-
ter not covered in scheduled course offerings.
(FSP) Staff

Anthropology

(College of Letters and Science)

Department Office: 232 Kroeber Hall, (510) 643-3991
http://www.berkeley.edu/Anth/dept.html

Professors

Stanley H. Brandes, Ph.D. University of California, Berkeley.
Psychology, religion, Spain, Mexico
Margaret W. Conkey (Class of 1966 Chair of Distinguished Teaching), Ph.D. University of Chicago. Archaeology, prehistory, hunter-gatherers, gender,
Terrence Deacon, Ph.D. Harvard University. Biological anthropology, neuroanatomy, human communication, behavior, evolution
Nelson H. Graham, Ph.D. University of Chicago. Kinship, art, tourism, circumpolar, Japan
William H. Harvey (Distinguished Chair in Linguistic Anthropology), Ph.D. University of Chicago. Maya culture, language, culture and language, knowledge, cognition and
William R. Irons, Ph.D. University of California, Los Angeles. Archaeology, food and agriculture, political complexity, gender, paleoethnobotany, Andes

Associate Professors

Rosemary Joyce, Ph.D. University of Illinois, Urbana.
Settlement patterns, symbolism, complex societies, ceramics, China, UGRC
Patrick V. Kirch, Ph.D. University of California, Berkeley. Dental anthropology, human evolution
Kent G. Lightfoot, Ph.D. Arizona State University.
American archaeologists, prehistory
Lauren Nader, Ph.D. Radcliffe/Harvard University, Harvard, Middle East, law, controlling processes, conflict theory
Aihwa Ong, Ph.D. Columbia University. Cultural politics, gender and sexuality, transnationalism, SE Asia, U.S.
Paul M. Rabinov, Ph.D. University of Chicago, France. History of social thought, genomics
Nancy Scheper-Hughes, Ph.D. University of California, Berkeley. Medical, psychological, Europe, Brazil
Ruth Tringham, Ph.D. Harvard University. Prehistory, prehistoric theory, archaeology
George P. Van Slyke (Emeritus), Ph.D. University of Chicago, Japan. Linguistics, anthropology, ethnology
Phyllis DeChene, Ph.D. University of Chicago. Physical anthropology, prehistory, development
George M. Foster (Emeritus), Ph.D. University of California, Berkeley. U.S., China, S.E. Asia, peasantry, politics
Vincent M. Sardam, Ph.D. University of California, Berkeley. Evolution, biochemistry, behavior, variation
William S. Simple, Ph.D. Harvard University. Social anthropology, North America

Assistant Professors

Lawrence Cohen, Ph.D. Harvard University. Medical anthropology, environmental science, religion, South Asia
Manon Perre, Ph.D. University of Chicago. Social and gender, anthropology, gender, and sexuality, Latin America, Eastern Europe, West Africa, contemporary Western Europe
 достижени, Ph.D. McGill University. Hunter-gatherer subsistence and settlement, ceramic analysis, East Asian archaeology, New Guinea
Xin Liu, Ph.D. University of Chicago. Discourse and critical theory, anthropology, Asian, Asia
Lauree A. Wilkie, Ph.D. University of California, Los Angeles. Historical and contemporary ethnic, gender, community, Louisiana, California, Indonesia

Adjunct Faculty

Sabrina Agarwal, Ph.D. University of Toronto.
Bioarchaeology and paleoanthropology, osteology and osteoporosis, health and disease, paleopathology
Cori Hayden, Ph.D. University of California, Santa Cruz. Anthropology of science, technology, and medicine, Latin America (particularly Mexico); postcolonial studies, kinship, gender, queer studies
Charles Hirschkind, Ph.D. Johns Hopkins University. Religion, anthropology of the senses, media theory, performance
Saba Mahmood, Ph.D. Duke University. Anthropology, Islam, the Middle East, South Africa
Pearl M. Moore, Ph.D. Stanford University. Anthropology, contemporary social theory, South Asia
Lawrence Cohen, Ph.D. Stanford University. Anthropology, Russian, Soviet, semiotics
Edward Luby, Ph.D. California Academy of Sciences. Analysis (Berkeley Natural History Museums)

Medical Anthropology Ph.D. Program Office: 333
Kroeber Hall, (510) 643-3995

Professor

Nancy Scheper-Hughes, Ph.D.

Associate Professor

Lawrence Cohen, Ph.D.

Department Overview

The Department of Anthropology offers students the opportunity to study human-kind from the broadest, historical and comparative perspective. 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 anthropological major is designed to serve two purposes: to provide a general education in anthropological theory and methodology 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 go on to graduate school 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 Berkeley or at another institution, 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 also 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, 239 Kroeber Hall, is part of the campus library system. It contains nearly 70,000 bound volumes and receives 965 current serials. The 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 Undergradu-
ate Program may inquire at 209 Kroeber Hall. Stu-
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; folklore theory; ethnographic and socio-cultural anthropology or archaeology; 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 successful completion of the oral examination, 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 94720-3330. The Anthropology brochure is available from the Program Office, 333 Kroeber Hall, Berkeley, CA 94720-3710, or the General Catalog of UCB and UCSF Campus.

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 general and departmental applications is December 15. Applications are screened by the anthropology faculty, and selections are made on the basis of academic excellence, letters of recommendation, 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, and behavioral adaptation of humans and their prehistoric and living relatives. (F,SP) Staff

2. Introduction to Archaeology. (4) Students will receive no credit for 2AC after taking 2AC but may receive a deficient 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 anthropology with attention to the impact that anthropology has had on the construction of other human affinities 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 ailments?" (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 asks the questions, "Who gets what diseases?" (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 investigates the ways in which 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 integration of the interests and concerns of each student. During the first year of training, students are required to take core courses in both sociocultural and biological 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 course work, one to two years of dissertation research, and one to two years of writing the dissertation. Three hours of writing the dissertation. For a complete list of faculty, consult the Medical Anthropology brochure available from the Program Office, 333 Kroeber Hall, Berkeley, CA 94720-3710, or the General Catalog of UCB and UCSF Campus.

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 awarded 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.
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.

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. 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. Prerequisites: Consent of instructor; freshmen or sophomore status. One and one half 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 Curricula section of this catalog. Three to twelve hours of group study (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. One hour of discussion per week. Three to twelve hours of group study (or fieldwork) per week. Must be taken on a passed/not passed basis. Prerequisites: Consent of instructor; freshmen and sophomores only. Individual study supervised by one and one half hours of discussion per week. Three to twelve hours of group study (or fieldwork) per week. Must be taken on a passed/not passed basis. Prerequisites: Consent of instructor; freshmen and sophomores only. Individual study supervised by one and one half hours of discussion per week.

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 to twelve hours of 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. One hour of discussion per week. Three to twelve hours of group study (or fieldwork) per week. Must be taken on a passed/not passed basis. Prerequisites: Consent of instructor; freshmen and sophomores only. Individual study supervised by one and one half hours of discussion per week.

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, Biology 1A-1B. Human variation in both a racial and non-racial context; basic genetics (both molecular and populational); theoretical frameworks, 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: 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 contexts; introduction to use of statistics in biological analysis. Also listed as Integrative Biology C142.

105. Primate Evolution. (4) Three hours of lecture per week. Prerequisites: 1 recommended. A consideration of the major groups of primates with an emphasis on the evolution of behavior. (F.SP) Nengo

106. Primate Behavior. (4) Three hours of lecture and one hour of discussion per week. Prerequisites: 1 or Integrative Biology 32 recommended. Humans, apes, and selected monkeys are the primes of concern, and among this array patterns and degrees of social behavior are varied. Lectures present a general introduction to behavior and its ecological context, the interaction of biology and behavior from an evolutionary perspective, and an examination of the roots of modern human behavior. (F.SP) Staff

108. Problems in Primate Behavior and Ecology. (4) Three hours of lecture per week. Special problems in primate behavior and ecology, such as ecological adaptation, socialization, and the biological bases of behavior.

109. Dietary Anthropology. (4) Three hours of lecture per week. This course focuses on different aspects of the human diet seeing insights into factors related to nutrition, including selection, diet, and food aversions and avoidance, unusual behaviors with respect to food, body politics, dietary politics, food festivals, folklore of food, etc. In the first few lectures brief mention will be made of the nature of food itself and some attention will be paid to the dietary patterns of non-human primates and the probable diet of early humans.

110. Theory and Method in Physical Anthropology. (4) Three hours of lecture and one hour of discussion per week. Prerequisites: 1. A unifying view of past history and current trends of Physical Anthropology, emphasizing schools of thought, important figures and major areas of research.

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 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 utilize both 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. Prerequisites: Consent of instructor. Cultural, psychological, and biological aspects of the definitions, symptoms, and treatments of illness. Comparative study of medical systems, practitioners, and patients. (F.SP)

117. The Anthropology of Aging and the Life Course. (4) Three hours of lecture per week. Prerequisite: 3 is recommended. A sociocultural approach to the study of age and aging and of the different periods of the life course: birth, infancy, childhood, youth and adolescence, adulthood and middle age, old age, and dying. How might we think about time, the body, and what it means to talk about life—through a focus on age?

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 the sociocultural and biomedical and applied approaches to medical anthropology. (F.SP)

Archaeology

121. Historical Archaeology. Archaeology of the period 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: Consent of instructor. Formerly 121. Patterns in material culture as it reflects behavioral and psychological aspects of American culture since the 17th century. Topics include architecture, domestic artifacts, mortuary art,
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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. 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 archaeological, documentary, oral historical and ethnographic data. Emphasis on continuing theoretical developments 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: 121B recommended and consent of instructor. Learn to work with historical artifacts from the stage of recovery through the stages of analysis and interpretation. The focus is on the analysis of materials (bone, metal, glass, plastic, artifacts) recovered from historic sites. Skills acquired include how to identify, date, record, illustrate, photograph, catalog, and interpret historical archaeological materials through a combination of lectures, lab exercises, and a research paper.

122. Archaeology of the Americas. Three hours of lecture per week. Prerequisites: 2. A group of courses that examine the native societies and cultures of the Americas in the past, as known from a variety of sources, including Native American oral traditions, documentation, and published materials. Emphasis is placed on the development of archaeological, biological anthropology, and native oral traditions. Course studies include the Caribbean, Florida, Louisiana, Virginia, Alaska, Hawaii, and California will be included.

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

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

122E. Andean Archaeology. (4) This course covers the archaeology and history of the indigenous societies of the Andean region of South America. The lectures and readings emphasize major political, economic, social, and symbolic processes in the development of the Andean civilizations. Particular attention is paid to the development of the early states along the coast of Peru. The development of the ceramic, metal, and lithic traditions of the highland and coastal Peru are covered, as well as the relationship between the political, economic, and religious systems of the later empires and earlier political structures and social processes are also emphasized. (F,SP) Staff

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

122G. Archaeology of the American Southwest. (4) This course will outline the development of native cultures in the American Southwest from Paleo-Indian times (ca. 11,500 BC) through early European contact (ca. A.D. 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 and archaeology. Can be taught as a distance learning course with another university. (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, through the study of archaeology, ethnography, and other relevant fields. No specific sequence to courses; students may take any or all of the following in any sequence.

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

123B. Archaeology of Africa. (4) Prerequisites: 2. Formerly 126. Prehistory and early civilizations of Africa; selected archaeological sites and current issues in interpretation.

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.

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

123E. Mediterranean Archaeology. (4) Prerequisites: 2. Formerly 126. Prehistoric and early civilizations of the Mediterranean basin and its hinterland.

124. Pacific Cultures. Three hours of lecture per week. Prerequisites: 2. A variety of courses that consider the peoples and past cultures and societies of Oceania and 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.

124A. Archaeology of South Pacific. (4) Selected topics and research problems in the archaeology of the South Pacific. Emphasis on establishment of complex chiefdoms in many localities. Stress on current issues and interpretations.

124AC. Hawaiian Ethnohistory. (3) 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 African. 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 American cultures requirement for the major 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.

125B. Archaeology and Japanese Identities. (4) Course explores stereotypes images of traditional Japanese culture and people through archaeological analysis. Particular emphasis will be placed on changing life- ways 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)

126. Special Topics in Archaeology. (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)

128M. Special Topics in Archaeology/Method. (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 that transcend time periods or cultural areas. Courses may be taken in any sequence. (F,SP)

129A. Prehistoric Art. (4) Draws on study of art in non-literate societies and on archaeology to explore a range of prehistoric arts in cultural contexts; e.g., rock art; Ice Age Arts; prehistoric ceramics. Usses illustrative materials from the Hearst Museum. (F,SP)

129B. Archaeology of Hunter-Gatherers. (4) Course covers an overview of hunter-gatherer archaeology, focusing on the history of hunter-gatherer archaeology in North America and Britain; long-term changes in hunter-gatherer subsistence, mobility, ceremonial practices and social organization. Why is this important? What are the causes and effects of changing scales of analysis? (F,SP)

129D. The Archaeology of Global Change. (4) This course explores the interface between archaeology, ecology, geography, environmental studies, and geomorphology to understand global change. The geographic scope is global and will cover time periods ranging over the Holocene and at time to the Pleistocene. (F,SP)

129E. Household Archaeology. (4) This class explores the questions: why study the archaeology of households? How do we define households and how can we study them? The course will explore research questions, strategies, and methodologies does the archaeological investigation of households entail? How does the study of households contribute to our understanding of past households and their social organization? Why is this important? What are the causes and effects of changing scales of analysis? (F,SP)

130. Invention and Technology. (4) Three hours of lecture per week. Prerequisites: Consent of instructor. Origin, history, and spread of fundamental inventions; illustrative material from the Hearst Museum of Anthropology. (F,SP)

131. Archaeological Science. (4) Three hours of lecture and three hours of laboratory per week. Prerequisites: 2 and/or consent of instructor. A survey of the application of principles and techniques derived from the physical and life sciences to the interpretation of archaeological materials. (F,SP)

132. Analysis of Archaeological Materials. Three hours of lecture and three hours of laboratory per week. Prerequisites: 2 and/or consent of instructor. Principles of analysis of inorganic archaeologial materials, including, but not limited to stone, ceramics, and metals, with laboratory instruction. These courses meet the American cultures 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)

133. Field Course in Archaeological Methods. (4) Course may be repeated for credit. One hour of lecture and six hours of fieldwork per week. Prerequisites: 2 or consent of instructor. Prereq- usites: 2 or consent of instructor. This course is designed for students interested in practical experience with field study of archaeological sites and materials. Coverage may include reconnaissance, mapping, recording, and excavation.

134. Analysis of the Archaeological Record. (4) Three hours of lecture and three hours of laboratory per week. Prerequisites: 2 or consent of instructor. Prereq- usites: 2 or consent of instructor. Guidance in the preparation of excavated materials for publication, including sampling and analysis strategy, drawing, photography and write-up.

134B. Multimedia Authoring for Archaeology. (4) Course may be repeated for credit. One hour of lecture, four hours of scheduled laboratory, and six or more hours of unscheduled laboratory per week. Prerequisites: 2; some experience with Macintosh computers, especially basic graphics software, is rec- ommended. This course will explore the multimedia presentation of archaeological data and its interpre- tation on CD-ROMs and the World Wide Web. We shall study how archaeology is expressed through these media. The aim is to gain experience in authoring multimedia presentations and interpretations of archaeological data. The focus of the class, how- ever, will be the publication of the content of ar- chaeology, rather than on acquiring expertise in its software. The course will meet the Method requirement for the anthropology major. (F,SP)

135. Paleoethnobotany: Archaeological Methods and Laboratory Techniques. (4) Three hours of lec- ture and three hours of laboratory per week. Prereq- usites: 2 and consent of instructor. An introduction to the basic approaches and techniques in archaeo- botanical analysis. A series of different data types and their interpretation will be discussed, including plant phytoliths, pollen, and DNA, with an emphasis on macrofossil remains. Laboratory study will include the major classes of plant remains likely to be encountered in archaeological sites. Discussion will emphasize the use of plant remains to answer archaeological ques- tions, rather than study the plant remains for their own sake. Macroscopic work and computing will be included.

135B. Environmental Archaeology. (4) Three hours of lecture and one hour of discussion per week. Prereq- usites: 2. The major issues, research objectives, databases, and techniques involved in the study of past society’s relationship and interaction with the nat- ural environment. Analytical methods that examine “non- cultural” information in archaeological research, but with a cultural orientation. Major subjects addressed will be paleoenvironmental reconstruction; human-en- vironmental interaction; impact; and environmental degradation; paleo- and domestication; land-use and social environments; with an emphasis on eco- factual analysis.

136. Public Anthropology. Three hours of lecture per week. A variety of courses that introduce principles in the public aspects of anthropology. These courses may be taken in any order. (F,SP)

136B. Museum Methods. (4) This course will introduce participants to the fundamentals of contemporary muse- um practices. It is intended for two groups of stu- dents: individuals who may be thinking of conducting research for a museum, and may benefit from an un- derstanding of the way these institutions work; and individuals who may be thinking of museum work as a post-graduate career. This course will include discussion of museum concepts and practical application of these concepts through real-world exercises. While the course fulfills the method requirement, it covers practical aspects of natural history, and science museums in particular. (F,SP)

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. The 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 include the history of ethnography, ethnography, ethnographic filmmaking, and the problematic relationship between 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 film field production. Based on the pre- vious coursework 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 produc- tion as well as editing. (F,SP)

139. Controlling Processes. (4) Three hours of lec- ture per week. Prerequisites: Those with at least one social science course will be more familiar with the subject matter. This course focuses on the key theoretical concepts related to power and control and examine in- direct mechanisms and processes by which direct con- trol becomes hidden, voluntary, and unconscious in in- dustrialized society. Readings will cover domestic, law, politics, religion, medicine, sex and gender.

140. Indigenous Peoples. (4) Three hours of lecture per week. Anthropological study of past and present in- digenous peoples, in precolonial, colonial, and post- colonial historical contexts. (F,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. Pri- mary emphasis on non-Western societies.

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- lutionary change inform our general understanding of societies past and present. This course will evaluate these models by reading about the particular and mul- titarious experiences of social change in different times and places, and will consider new forms of con- tinuity and change generated by the colonial encoun- ter, agrarian transition, industrialization, emigra- tion, and the impact of cosmopolitan culture on non-Western societies. (F,SP)

145. Urban Anthropology. (4) Three hours of lecture per week. Prerequisites: 3 or Sociology 1 or consent of instructor. Comparative examination of theories and sys- tems of social inequality by reference to societies rang- ing from prehistory to the present. Readings will cover everything from egalitarian to stratified, with attention to inequality defined by kinship, gender, age, servitude, class, caste, race, ethnicity, colonial status, etc. (F,SP)

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 po- litical considerations are translated into cultural forms. Topics include: philosophy and history of social sci- ence; foundational knowledge, the social, difference and power, social science and ethics. (F,SP)

156C. Anthropology of Modernity: Science. (4) Three hours of lecture per week. Prerequisites: A background in critical theory. The course will take an anthropological approach to modern science under- standing as an historically situated, socially contextualized set of practices, discourses and institutions. Readings will include theoretical works drawn from Kuhn, Hei- degger, Weber and Foucault as well as case studies with particular reference to contemporary bioculture. Students are expected to have a background in con- temporary theory.

157. Anthropology of Law. (4) Three hours of lecture per week. Prerequisites: 3 or consent of instructor. Comparative survey of the ethnography of law; meth- ods and concepts relevant to the interpretative analysis of the forms and functions of law.

158. Religion and Anthropology. (4) Three hours of lecture per week. Prerequisites: 3 or consent of in- structor. A consideration of the interplay between re- ligious beliefs and institutions and other aspects of cul- ture and society. (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, super- stitions, games, songs, and narratives. (F,SP)

C160. Forms of Folklore. (4) Three hours of lecture per week. Prerequisites: Upper division standing. A
166. Language in Society. (4) Three hours of lecture per week. Prerequisites: 3 or consent of instructor. Special topics in folklore and ethnology. This course satisfies the American cultures requirement.

167. Contemporary Latin America. (4) Course may be repeated for credit. Three hours of lecture per week. Emphasis on the development of folk-past societies, and the concept of national cultures. Discussion of contemporary issues will also be covered.

168. Mexico and Central America. (4) Three hours of lecture per week. Ethnology of Indian and Latin American culture with special emphasis on contemporary issues. (F,SP)

169. Special 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.

170. Language in Society. (4) Three hours of lecture per week. Prerequisites: 3 or consent of instructor. Special topics in folklore and ethnology. This course satisfies the American cultures requirement.

171. Japan. (4) Three hours of lecture per week. Ethnology of Indian and Latin American culture with special emphasis on contemporary issues. (F,SP)

172. Special Topics in Social/Cultural Anthropology. (4) Course may be repeated for credit. Three hours of lecture per week. Prerequisites: 3 or other social science/interdisciplinary course. This course examines the current political, economic, and cultural dynamism of the region. Topics include colonialism, patron-colonialism, gender relations, capitalism, and the postcolonial state. (F,SP)


174. California Historical Anthropology. (4) Three hours of lecture per week. Combining historical anthropology, ethnography, and ethnological methods, this course will examine the history of groups and the interaction in early colonial California. This course satisfies the American cultures requirement.

175. Native Peoples of South America. (4) Three hours of lecture per week. Archaeology, ethnology, and ethnohistory.

176. Contemporary Latin America. (4) Course may be repeated for credit. Three hours of lecture per week. Emphasis on the development of folk-past societies, and the concept of national cultures. Discussion of contemporary issues will also be covered.

177. Mexico and Central America. (4) Three hours of lecture per week. Ethnology of Indian and Latin American culture with special emphasis on contemporary issues. (F,SP)


179. Ethnography of the Maya. (4) Students will receive no credit for 179 after taking 188 spring or fall 2001. Three hours of lecture per week. Prerequisites: 3 recommended. An introduction to the anthropological study of Maya people in Southern Mexico, Guatemala, and Belize. The course focuses on certain parts of the Maya region, emphasizing selected themes and problems. We will explore historical and developmental trajectories of Maya studies and the historical transformations of Maya societies. These themes will be traced through the study 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. Recent and historical perspectives on people, place, and community organization; political, economic, and cultural dynamism of the region. Prerequisites: 60 units; good academic standing. Undergraduate research by small groups.

181. Themes in the Anthropology of the Middle East and Islam. (4) Three hours of lecture per week. Prerequisites: 3 recommended. Cultures of the contemporary Middle East and Islam. Prerequisites: 60 units; good academic standing. Undergraduate research by small groups.

182. Topics in the Anthropological Study of Africa. (4) Three hours of lecture per week. Prerequisites: 3 and/or 114. The course will focus on African societies and cultures, as well as on issues relating to the history of Africanist anthropology. Images and constructs of Africa and Africans will thus be contextualized in relation to prevailing anthropological theories at different times, and in different regions of the continent.

183. Topics in Area Studies. (4) Three hours of lecture per week. Prerequisites: Consent of instructor. Topic to vary each semester. Also listed as Integrative Biology C265.

184. South Asia. (4) Students will receive no credit for 184 after taking 188A for credit. Three hours of lecture per week. Cultural traditions, social organization, and social change, with an emphasis on India and Pakistan. Also listed as South Asian C145. (F,SP)

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

186. Southeast Asia. (4) Three hours of lecture per week. Prerequisites: 3 or other social science/interdisciplinary course. This course examines the current political, economic, and cultural dynamism of the region. Topics include colonialism, patron-colonialism, gender relations, capitalism, and the postcolonial state. Also listed as South and Southeast Asian Studies C186. (F,SP)

187. Topics in Area Studies. (4) Course may be repeated for credit. Three hours of lecture per week. Special topics in cultural areas not otherwise covered. (F,SP)

188. Topics in Area Studies. (4) Course may be repeated for credit. Three hours of lecture per week. Special topics in cultural areas not otherwise covered. (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 current research theory, method; issues of social and cultural concern; culture change, conflict, and adaptation. May combine more than one subdiscipline of Anthropology.

189A. Special Topics in Cultural 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)

190. Special Topics in Social Anthropology. (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)

Seminars and Independent Study

195A-215B. Advanced Medical Anthropology. (4;4) Course may be repeated for credit. Three hours of lecture per week. Credit and grade to be awarded on completion of sequence. Prerequisites: Open only to honors students. Systematic readings in history and methods, library, collection and analysis of data, and the preparation of an honors thesis. Group or individual tutorials.

196. Directed Group Study. (1-4) 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. Three to thirty-six hours of tutorial or fieldwork per week. Must be taken on a passed/not passed basis. Prerequisites: Upper-division status; consent of instructor. Individual field experience sponsored by a faculty member; written reports required.

199. Supervised Independent Study. (1-4) Course may be repeated for credit. Two hours of seminar per week. 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

215A-215B. Advanced Medical Anthropology. (4;4) Course may be repeated for credit. Three hours of lecture 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. Supervised 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. Two 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, zooarchaeology, etc.

228B. Multimedia Authoring in Archaeology. (4) Course may be repeated for credit. One hour of seminar discussion, one hour of lecture in laboratory instruction, and a minimum of six hours of laboratory per week. Prerequisites: Some experience with Macintosh computer and/or graphics software, is recommended. This is a combined seminar and laboratory course that will explore the multimedia presentation of archaeological data and its interpretation on the Internet and the World Wide Web. We shall focus on what "face" of archaeology is expressed through these media. We shall examine critically the effects of multimedia authoring for both research and teaching arch- aeology, in terms of the power of visual imagery, movement, and sound effects.

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.

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

230X. Various Topics in Current Archaeological Issues and Methods. (2) A variety of formats totaling 22 hours of class meeting time per semester. An overview of new methods, trends, and issues in archaeology.

Social and Cultural Anthropology

240A-240B. Fundamentals of Anthropological Theory. (5,5) Two hours of lecture and two hours of discussion per week. Prerequisites: Required of all graduate students in social/cultural anthropology. Advanced survey of the major theoretical and empirical areas of social and cultural anthropology. Sequence begins Fall.

250. Seminars in Social and Cultural Anthropology. Course may be repeated for credit. Two 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)

250J. Ethnographic Field Methods. (4)

250K. Colonialism and Postcolonialism. (4)

250N. Classic Ethnography. (4)

250O. Practice Theory. (4)

250P. Development. (4)

250R. Dissertation Writing. (4)

250S. Material Culture. (4)

250T. Indigenous Peoples. (4)

250U. Race, Ethnicity, and Identity. (4)

250V. Tourism. (4)

250X. Special Topics. (4)

251. Research Design. (4) Course may be repeated for credit. Two hours of seminar per week.

Folklore

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

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. Courses will vary from year to year. See Departmental Internal Catalogue for details and descriptions of course offerings for each semester.

280B. Africa. (4)

280C. South Asia. (4)

280D. China. (4)

280E. Japan. (4)

280G. Oceania. (4)

280X. Special Topics in Area Studies. (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. Analysis and write-up of field materials.

298. Directed Reading. (1-8) Course may be repeated for credit. One to eight hours of conference per week. Prerequisites: Consent of instructor. Individual conferences intended to provide directed reading in subject matter not covered by available seminar offerings.

299. Directed Research. (1-12) Course may be repeated for credit. Two to eight hours of conference per week. Prerequisites: Consent of instructor. Individual conferences 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 to six 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

(Discontinued)

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 to six 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.

Program Overview

This graduate program is administered by the College of Engineering's Interdisciplinary Studies Center. The program has three major areas of emphasis: applied physics, engineering science, and mathematical sciences. Faculty associated with the program are drawn from several departments within the College of Engineering, as well as from the Departments of Physics, Chemistry, Chemical Engineering, and Mathematics. Topics of interest include the novel properties and applications of nanostuctures, thin films and interface science, micro- and nanomechanical systems, short wavelength coherent radiation, X-ray micro-imaging for the life and physical sciences, plasma physics and plasma-assisted materials processing, laser-induced chemical processes, laser probing of complex reacting systems, ultrafast phenomena, particle accelerators, nonlinear dynamics, chaotic systems, numerical methods, and topics in computational fluid mechanics and reacting flows. 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; students usually apply to the designated emphasis during the first or second year of study. For further information, visit the Berkeley designated emphasis in nanoscale science and engineering web site at http://nano.berkeley.edu/

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. Among these facilities are the National Center for Electron Microscopy, with the world's highest resolution high-voltage microscope; a microfabrication lab for student work involving lithographic MEMS ion-implantation, and thin-film deposition; an integrated sensors laboratory; femtosecond laser laboratories; optical, electrical, and magnetic resonance spectoscopies; short wavelength laser and X-ray research laboratories; an unparalleled variety of material, chemical, and surface science analytic equipment; and a soft X-ray synchrotron dedicated to materials, chemical, and biological research using 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 fa-
Graduate Courses. Students in the AS&T Program take courses from regular departments with the concurrence of faculty advisers. In addition, AS&T sponsors the following courses: AST 201/E 217, Materials for Electronic Engineering (3 units); AST 210/EE 213, Soft X-Rays and EUV Radiation (3 units); AST 239/EE 239, Partially Ionized Plasmas (3 units); AST 225/MSE 225, Thin-Film Science and Technology (3 units); AST 298R/ChemE 298R, Applied Spectroscopy (3 units); Engineering 298A, Introduction to Electron Beam Lithography and Nanofabrication Technology (3 units); Engineering 298B, Topics in Soft X-Rays, Nanostructures and Applications (1 unit); and Engineering 299B, Science and Technology of Magnetism and Magnetic Materials.

Admission. The complete application, including transcripts, GRE scores, three letters of reference, and a statement of academic and professional goals, is due the first Friday in January for the following fall semester. To obtain application forms, students should contact the Applied Science and Technology Graduate Group, 300 Bechtel Engineering Center #1708, University of California, Berkeley, Berkeley, CA 94720-1708. 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 ultraviolet, x-rays, and gamma-rays, and their interaction with matter, using a semi-classical atomic model. Subject matter will include the generation of x-rays by electronic and laser produced plasma. Comparison of thin-film depositions techniques. Characterization techniques. Past x-ray studies of corrosion and fractography. Concepts of spatial and temporal coherence will be discussed. Also listed as Electrical Engineering C213. (SP/AT) Athew

C225. Thin-Film Science and Technology. (3) Three hours of lecture per week. Prerequisites: Graduate standing in physics, chemistry, or chemical engineering. Thin-film nucleation and growth, microstructural 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, Neuheuter

C295R. Applied Spectroscopy. (3) Three hours of lecture per week. Prerequisites: Graduate standing 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 spectral regions with emphasis on the electromagnetic spectrum, from gamma rays to radio waves. Special emphasis is placed on application to research problems in applied and engineering sciences. Graduate research interests in experimental and theoretical analysis, discovery are best served by this course. Also listed as Chemical Engineering C295R.

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. Sponsoring by Engineering Interdisciplinary Studies Center. (F/SP) Staff

Architecture

(College of Environmental Design)

Department Office: 232 Wurster Hall #1800, (510) 642-4942, http://arch.berkeley.edu

Chair: W. Mike Martin, Ph.D.

Professors

Nazar Alsayed, Ph.D. University of California, Berkeley. Architecture and urban design, urban history, urban development in the developing world.

*Edward A. Arens, Ph.D. University of Edinburgh. Building technology, energy

Charles Benton, M.A. Massachusetts Institute of Technology. Building technology.


Gail Girag, Ph.D. University of California, Berkeley. Building technology, comfort, energy.

Mary C. Gier, G.M.A. M.I.W. Washington University. Ceramic design, post-disaster reconstruction policy and planning.

Galen Crazn, Ph.D. University of Chicago. Social factors in design, sociocultural design, body-conscious design, sustainable parks.

Sam Davis, M.E.D. Yale University. F.A.I.A. Architectural design.

Anthony Dubovsky, M.A. University of California, Berkeley, Visual and environmental design.


Harison Fraker Jr., M.F.A. Princeton University. Affordable housing, sustainable environments, passive solar, daylighting, and sustainable design.

Paul Groth, Ph.D. University of California, Berkeley. History of urban form and cultural landscape.

Yehuda Kalay, Ph.D. Carnegie-Mellon, Computers, design theories and methods.

Raymond Litchte, M.S., M.A., M.C.P. Columbia University; University of California, Berkeley. Architectural design, special populations.

*Donny Lyndm, M.F.A. Princeton University. F.A.I.A. (Eva Li Chi) Architecture, social context and architecture.

W. Mike Martin, Ph.D. University of California, Berkeley. Design and study of equity men and women.

*Jean-Pierre Prozet, Dipl. Arch. E.P.U. Universite de Lausanne, Switzerland. Design theories and methods.


Stephen O. Tornberg, Ph.D. Harvard University. Architectural history.

W. Marc Treib, M.Arch. University of California, Berkeley, Architectural design, architecture of Japan and Scandinavia.

Christopher Alexander (Emeritus), Ph.D. Harvard University. Architectural design, urbanism.

Richard Bender (Emeritus), M.Arch, Harvard University

Kenneth H. Cardwell (Emeritus), A.B. University of California, Berkeley.

Verron A. DeMars (Emeritus), A.B., F.A.I.A. University of California, Berkeley.

Margaret P. Daheems (d’Hamer) (Emeritus), M.A., F.A.I.A. California College of Arts and Crafts, California College.

Electronic imaging, computer graphics.

W. Russell Ellis, Jr. (Emeritus), Ph.D. University of California at Los Angeles. Social theory.

Norma D. Evenson (Emeritus), Ph.D. Yale University.

Sami Y. Hassid, M.Arch., F.A.I.A. Harvard University.

Sanford Hinehen (Emeritus), B.Arch., F.A.I.A. Columbia University. Architectural design.

Henry J. Lagorio (Emeritus), M.A.A. University of California, Berkeley.

Lars G. Lerup (Emeritus), M.Arch, Harvard University. Architectural design.

Clare Cooper Marcus (Emeritus), 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.

Donald E. Olsen (Emeritus), M.Arch., F.A.I.A. Harvard University.


Jesse Reichel, (Emeritus), Chicago Institute of Design.

Herwin Schaefer (Emeritus), Ph.D. Harvard University.

Daniel Solomon (Emeritus), M.Arch. University of California, Berkeley.

Berkeley, Architectural design.

Claude Stoller (Emeritus), F.A.I.A. Harvard University.

Dei Upton (Emeritus), Ph.D. Brown University. Architectural history and theory.

Sim H. Van der Ryn (Emeritus), B.Arch. University of Michigan. Architectural design, appropriate technology.

Associate Professors

R. Gary Black, M.Arch, University of California, Berkeley, Structures.

Dana Burrock, M.Arch. University of Michigan. Japanese architecture and production, teamwork and multiple

expertise in innovations, building systems and technologies.


Renee Chow, M.Arch. Massachusetts Institute of Technology. Architectural design.


Kathleen James-Chalabrhody, Ph.D. University of Pennsylvania. History of architecture.

Jill Stoner, M.Arch. University of Pennsylvania, Architectural design


Gary H. Brown (Emeritus), M.Arch. Harvard University. Architectural design.

Sara Itchikawa (Emeritus), B.Arch. University of California, Berkeley. Architectural design


Assistant Professors


Anthony Burke, M.S. Columbia University. Computing in conceptualization, design and making of buildings.


Lisa Ivanov, M.Arch. Harvard University. Design, architectural fabrication, edge city landscape.

Andrew Shanken, Ph.D. Princeton University. History of Architectural History. II on design professions and American culture.

Department Overview

Creating livable environments means balancing complex social, political, economic, and technical requirements with human needs. Undergraduate students and graduates share that goal. The department's faculty members are well-trained in these components and methods of interpreting and ultimately resolving conflicting forces is the major objective of our educational endeavor. To respond to this challenge, faculty members in Architecture represent a variety of scholarly and professional backgrounds and interests. Although ability in building design is often considered to be the goal of our educational system and our graduates, knowledge about how people can affect environments and manipulate natural, and natural resources in the creation of that environment is our major emphasis. Many students follow programs in environmental history, behavioral sciences, resource management, and design theory. Problem identification and formulation and the reconciliation of technical, aesthetic, and cultural concerns is a pursuit which often do not entail building construction. 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 in a major in architecture.

The undergraduate program in architecture combines required courses in environmental design and architecture with opportunities for highly varied 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 the field of 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 and well-rounded 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 registration boards require a four-year 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

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accreditation, depending on its degree of conformance with established educational standards. Master’s degree programs may consist of a pre-professional undergraduate degree and a professional graduate degree, which, when earned sequentially, comprise an accredited professional education in architecture. The preprofessional degree is not, by itself, recognized as an accredited degree.

The four-year, preprofessional degree, where offered, is not accredited by NAAB. The preprofessional degree is useful for those wishing a foundation in the field of architecture as preparation for entrance into an accredited professional degree program or for employment options in architecturally related areas.

Graduate Programs

The degree offers the professional degree Master of Architecture, the academic degree Doctor of Philosophy, and several smaller degree programs as described below.

Master of Architecture. The professional degree, Master of Architecture, will be awarded to students who successfully complete a program of studies of from one to three years in duration depending upon previous education and experience. The department, in concert with the institution’s undergraduate preparation, however, the length of the required residence period, the number of required semester course units, and the specific list of required courses may vary depending on the undergraduate major, professional and other work experience, and previous graduate study, if any.

Additional prerequisites for admission to the professional Master of Architecture program are college-level or equivalent mathematics 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 each student at the time she or he first registers for graduate study in the department.

Special one-year M.Arch. programs are available to students who have completed undergraduate preparation. Bachelor of Architecture, from an accredited school, or comparable five-year degrees from foreign universities and technical institutions.

Doctor of Philosophy Degree in Architecture. The Doctor of Philosophy in Architecture program is open to exceptionally qualified persons who present outstanding academic records along with clear evidence of commitment and ability in architectural research and scholarship. Graduate Division requirements with respect to admission, the language requirement, candidacy, and the dissertation under Ph.D. advisor (see below). Applicants must hold a bachelor’s degree from an accredited institution, but the department makes no restriction as to the discipline of the undergraduate preparation. Additional research is available from the department graduate assistant.

Master of Science Degree in Architecture. This nonprofessional degree program was developed to offer the opportunity for advanced research in specialized areas within the architecture curriculum. An academic year is appropriate for those who already hold a degree in architecture but wish to study a particular subject. Applicants from related disciplines may be accepted into the program, provided that they demonstrate experience related to the discipline of architecture. Depending upon previous preparation, students are required to complete a minimum of 32 to 48 credit units, including a combined research methods course taught by a faculty team. Remaining course work will be determined by the nature of the proposed research. A research thesis culminates the student’s program. Further information about requirements for admission and application materials may be obtained from the department’s graduate assistant.

Program in Visual Studies (Master of Arts Degree in Design). There is a small program in Visual Studies at the graduate level leading to the Master of Arts degree in design. Students with an interest in the Visual Arts/Architecture curriculum may receive credit for work done in the Visual Arts/Bachelor of Science degree in architecture, or equivalent degrees in related disciplines. The Master of Arts in Design program leads to the degree of the Master of Arts in Design. The undergraduate degree from the College of Environmental Design or in an art-related field is helpful but not necessary. The principal emphasis in the admission process is on the portfolio that all applicants for admission to the graduate program must submit.

Concurrent Program with the Department of City and Regional Planning. The Department of Architecture and the Department of City and Regional Planning offer a concurrent degree program leading to the dual M.Arch. and M.C.P. degrees for students holding the five-year Bachelor of Architecture degree or Bachelor of Arts/Bachelor of Science degree in architecture, or equivalent degrees in related disciplines. The Master of City Planning degree portion of the concurrent program requires completion of 36 semester units; the M.Arch. segment calls for 24-72 semester units, depending upon the undergraduate degree. Applicants should seek admission to the Department of Architecture and indicate that they wish to be considered for the Concurrent Program in Architecture and City and Regional Planning.

Concurrent Degree Program in Architecture and Landscape Architecture. The Departments of Architecture, 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. Problems emphasize the major social, technological and environmental determinants.

Introductory courses in the design of buildings. Problems emphasize the major social, technological and environmental determinants.

Graduate Architecture

Architecture

Lower Division Courses
24. Freshman Seminars. (1) Course may be repeated for credit as topic varies. One hour of seminar per week for one to two quarters. Prerequisites: Sections 1-2 to be graded on a pass/fail basis. Sections 3-4 to be graded on a pass/not pass basis. Berkeley Seminar Program. 

39. Sophomore Seminar. (1) Course may be repeated for credit as topic varies. Two hours of seminar per week for one to two quarters. Prerequisites: Sections 1-2 to be graded on a pass/fail basis. Berkeley Seminar Program.

84. Sophomore Seminar. (1,2) Course may be repeated for credit as topic varies. Two hours of seminar per week for one to two quarters. Prerequisites: Sections 1-2 to be graded on a pass/fail basis. Berkeley Seminar Program.

Design and Art Arts

Upper Division Courses
100A-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. Introductory courses 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 considerations. Studio work is supplemented by lectures, discussions, readings and field trips. (F.S.P) Staff

101. Case Studies in Architecture. (3) Course may be repeated for credit as topic varies. Three hours of lecture and five hours of studio per week. Prerequisites...
Methods of Design Practice

Upper Division Courses

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

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) Staff

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

Design 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) Protren 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). (F,SP) Staff

133. Computer Applications in Architecture. A student may take sequentially 2 or 3 modules in one semester. The series of short courses (called “modules”) teaches how to use specific hardware/software tools. It is intended to build computing skills needed in other courses, such as design studios. The length and the number of units of each module depend on its content. Each module is a self-contained unit. Some have prerequisites, and some can be taken only in conjunction with another course, as noted. (F,SP) Staff

133A. Two-Dimensional Computing Techniques in Architecture. (2) Two hours of lecture per week. This course looks at the principal 2-Dimensional CAD techniques used by architects to create presentations, schematic drawings, and working documents. Emphasis will be placed on the generation of 2D architectural graphics, the integration of those graphics with non-graphic data, and the uses of disparate graphic approaches. (F,SP)

133B. Three-Dimensional Computing Techniques in Architecture. (2) Two hours of lecture per week. This course looks at the principal 3-Dimensional modeling techniques used by architects to create computer models, rendered images, and animation. Emphasis will be
Building Environments

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)

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, energy ventilation, air-conditioning systems, lighting and acoustics. For current section offerings see departmental announcement. (F,SP)

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. Research Methods in Building Sciences. (3) 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 uses a wide range of passive cooling strategies, including solar control, natural ventilation, radiation, evaporation and earth-contact cooling and their treatment in architectural design. (SP)

245. Daylighting Analysis Using Physical Models. (3) Three hours of seminars per week. Prerequisites: 140 or consent of instructor. Scale 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)

246. Thermal Aspects of Building Design. (3) Three hours of seminar per week. Prerequisites: 140 or equivalent, consent of instructor. The thermal and lighting environment of buildings are qualitatively and quantitatively examined in detail. Climate effects on human comfort, building energy requirements, and on design approaches will be studied using history, field observation, computer analysis software, and physical modeling. Students will design and graphically present the thermal qualities of a building and of a window, in one of two real current projects. The designs will incorporate new technologies and energy standards. (F,SP) Arens

249. 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: Building Structures. (1-4) Selected topics such as experimental structures and architectural preservation. (F,SP)

Construction and Materials

Upper Division Courses

160. Introduction to Construction. (3) 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 two areas of the building assembly (structure and envelope); wood, concrete, steel, and glass. You will understand choices available and how materials are conventionally used. By observing construction, you will 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 departmental 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 fabrication in architecture: consistent, protected environments; worker efficiency and safety; trades are easy to coordinate; cheaper, semi-skilled labor can be used; construction periods can be shortened; and complementary systems can be more predictable. Off-site fabrication can allow for increased refinement and trial assemblies. However, it may also create monstrous 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 class addresses the role craft and construction play in Japanese architecture and applies these lessons through the evaluation of an exemplary recent building having unusual technical features. Buildings are expressions of theoretic 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

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.

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. The first part of the course is devoted to 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

172. Great Cities. (3-4) Forty-five hours of lecture per semester; additional 15 hours of seminar for one additional unit. Prerequisites: 170A-170B. A study of the physical fabric of a great city and its changing character through time.

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

174A. American Architecture. (3) Forty-five hours of lecture per semester. Prerequisites: 170A-170B and consent of instructor.

C174B. Vernacular Architecture. (3) Three hours of lecture per week. Prerequisites: 170A-170B. This course will introduce you to a variety of North American vernacular building traditions, to help you understand how and why these buildings were designed. Students are not academically trained as architects design and build, how buildings and landscapes are used, and what they mean to their builders and users. Topics to be explored include rural and urban building systems, commercial architecture, the public landscape, and the vernacular landscapes of work and of religion, focusing on European, African, and Native American traditions that shaped the most familiar and widespread folk architectures, as well as on the urban landscapes of 19th- and 20th-century immigrants. We will look at built environments as expressions of ethnic and racial identities, organizers of social life, and conscious works of art. Also listed as American Studies C174B. This course satisfies the American cultures requirement.

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-six hours of lecture per semester. Prerequisites: 170A-170B and consent of instructor.

175C. Japanese Architecture. (3) Forty-five hours of lecture per semester. Prerequisites: 170A-170B and consent of instructor.

179. Proseminar in the History of Architecture. (1-4) Course may be repeated for credit as topic varies. 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)
Art and History of Art (College of Letters and Science)

Practice of Art
Department Office: 345 Kroeber Hall, (510) 642-2582 http://berkeley.edu/dept/art/practice
Chair: Prof. Loren Partridge, Ph.D.

Professors
Mary L. O'Neal, M.F.A.
Richard B. Shaw, M.F.A.
Katherine D. Sherwood, M.F.A.
Robert L. Hartman, M.A. (Emeritus)
Anne L. Healy, B.A. (Emeritus)
Kari A. Kasten, M.A. (Emeritus)
James F. Melcher, M.F.A. (Emeritus)
George J. Miyasaka, M.F.A. (Emeritus)
David W. Simpson, M.A. (Emeritus)
Brian A. Wall (Emeritus)

Associate Professor
Jerold C. Ballaine, M.F.A. (Emeritus)

Assistant Professors
Michele Lopez, M.F.A.
Greg Nienmeyer, M.F.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 esthetic investigation.
2. To help students learn to think visually.
3. To help students understand the strategies that artists have devised to deal with esthetic problems in both traditional and nontraditional methods of art-making.
4. To help students develop a creative intelligence through practicing a visual arts discipline.

The undergraduate major is largely made up 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 has affected the perception that human beings have of themselves and their circumstamces.

Work by students is featured in the exhibitions of the Work 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 8A or 8B. A concentrated investigation of what painting on a two-dimensional surface can elicit from what is both observed and felt. Illustrated talks will help familiarize you with issues that have concerned painters in the 20th century. Lectures and demonstrations introduce students to techniques and varied applications. (F,SP)

12. The Language of Drawing. (4) Three hours of lecture and six hours of studio per week. Prerequisites: 8A or 8B. 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 acquaint you with the ideas that sculptors have explored in the 20th century. Lectures and demonstrations introduce students to techniques and varied applications. (F,SP)

13. Language of Painting. (4) Three hours of lecture and six hours of studio per week. Prerequisites: 8A or 8B. A concentrated investigation of what painting on a two-dimensional surface can elicit from what is both observed and felt. Illustrated talks will help familiarize you with issues that have concerned painters in the 20th century. Lectures and demonstrations introduce students to techniques and varied applications. (F,SP)

14. The Language of Sculpture. (4) Three hours of lecture and six hours of studio per week. Prerequisites: 8A or 8B. 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 acquaint you with the ideas that sculptors have explored in the 20th century. Lectures and demonstrations introduce students to techniques and varied applications. (F,SP)

16. Introduction to Printmaking. (4) Six hours of lecture and six 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 include transfer and digital printmaking. This course is a prerequisite for upper division print courses. Lectures and demonstrations introduce students to techniques and varied applications. (F,SP) Staff

23. Digital Media Foundation. (4) Three hours of lecture and six hours of studio per week. This course introduces principles of digital media creation from program to poetry through a combination of lectures, creative projects, and studio seminars. Topics: basic units of digital media, animation, interactive activity authoring, digital cinema, scripting, interactive art, web cam, and net art. Final project is a web-based ambient/dramatic performance. All course resources, projects, and reviews are web-based. Lectures and demonstrations introduce students to techniques and varied applications. (F,SP) 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 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 and subvert existing 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—will force us to reconsider the history of the semester—and be yet another means for dividing and disenchafishing, and can be the conduit of violence and transnational dominance. This course satisfies the American cultures requirement. (F,SP) Staff
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. See course description for topic and instructor details. The Freshman Seminar Program has been designed to help freshmen get acquainted with the University and the opportunity to explore an intellectual topic with a faculty member in a small-group setting. Freshman seminars are offered in all campus departments, and topics vary from department to department semester to semester. Enrollment is limited to 15 freshmen. (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 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. Hours of seminar per week per unit for six weeks. Three hours of seminar per week per unit for five weeks. Sections 1-2 to be graded on a passed/not passed basis. See course description for topic and instructor details. Sophomore seminars are small interactive courses offered by faculty members in departments across the campus. Sophomore seminars offer opportunity for closer, 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. (1-2) Course may be repeated for credit. Three hours of student work per week per unit for eight weeks. Must be taken on a passed/not passed basis. Prerequisites: Open to freshmen and sophomores. This is a student-initiated course to be offered for academic or other professional credit as a completer of an academic major or minor. The topic of the course will be suggested by the student in consultation with the faculty sponsor. The topics to be relevant to art practice. (F,SP) Staff

99. Supervised Independent Study. (1,2) One to two hours of independent study per week. Must be taken on a passed/not passed basis. This course is for the rubric for all one and two credit Independent Study courses in Art Practice that concentrate on the practical aspects of art production. Some students will study gallery work by participating in every phase of producing art exhibitions—from selecting works to hanging and insuring them. Other students will learn concepts, skills and information they can use in their major coursework. The 1-2 semester to semester will be taught by the student's faculty sponsor under the supervision of the faculty mentor. Topics to be relevant to art practice. (F,SP) 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. Further experience with the traditional elements of painting and invention and content as related to human experience. The course involves group critiques and lectures as well as assigned field trips. Lectures and demonstrations introduce students to techniques and varied applications. (F,SP) 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. Emphasis primarily on paper. 117 or 118 is required of all art majors. Lectures and demonstrations introduce students to techniques and varied applications. (F,SP) Staff

118. Figure Drawing. (4) Course may be repeated for credit. Three hours of lecture and six hours of studio per week. Prerequisites: 12, 14, 16 or 23 or equivalents. Emphasis on the human figure seen in the context of pictorial space, light and color. 118 is required of all art majors. Lectures and demonstrations introduce students to techniques and varied applications. (F,SP) 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, 16 or equivalents. An opportunity to 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 different ways that these mediums enhance and condition your ideas will be made clear through individual and group critiques. Lectures and demonstrations introduce students to techniques and varied applications. (F,SP) 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, and 16 or equivalents. In the course of making lithographs you will learn about inking and how to polish an artistic direction of your own. Your instructor will also help you develop skill in using both stone and metal plates. Lectures and demonstrations introduce students to techniques and varied applications. (F,SP) 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, 16, or equivalents. Non-traditional projects in printmaking. 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, 16, or equivalents. An opportunity to learn what an artist can do with the techniques of sculpture. This course is geared toward constructing objects, forms, and spatial structures to reveal concept. Further cultivation of ideas through illustrated talks of artists who have invented innovative forms of work. Lectures, discussions and cultural studies, and cultural consideration. Physical experience of space explored. Lectures and demonstrations introduce students to techniques 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, 16, or equivalents. An opportunity to learn what an artist can do with the techniques of ceramic sculpture. This course is geared toward constructing objects, forms, and spatial structures to reveal concept. Further cultivation of ideas through illustrated talks of artists who have invented innovative forms of work. Lectures, discussions and cultural studies, and cultural consideration. Physical experience of space explored. Lectures and demonstrations introduce students to techniques and varied applications. (F,SP) Staff

133. 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 the three-dimensional forms and their construction of 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. Lectures on philosophy, installation, video, photography, and the computer and new art forms and will become part of the future of art. Lectures and demonstrations introduce students to techniques and varied applications. (F,SP) Staff

137. Advanced Projects in Ceramics Sculpture. (4) Course may be repeated for credit. Three hours of lecture and six hours of studio per week. Prerequisites: 8, 12, 14, or equivalents. Students who are experienced and interested in ceramic art will be mentored in their ideas and their techniques and command of ceramic materials and processes. 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, or equivalents. Installation and site-specific work. Active use of all architectural sites on campus, both indoors and outdoors, for installation work. Students work on different sites in class to explore full range of "installation." Ultimately, each student will select a campus site or area and create an installation. Drawings of site, written proposals are integral to the final project. Lectures and demonstrations introduce students to techniques and varied applications. (F,SP) Staff

141. Temporal Structures: Video and Performance Art. (4) Course may be repeated for credit. Three hours of lecture and six hours of studio per week. Prerequisites: 8, 12, and one from 13, 14, 16, 23, or equivalents. Projects are aimed at understanding and inventing ways in which time and space can become key elements in an artwork. Regular screenings of professional tapes will illustrate uses of the mediums and provide a historical context. Lectures and demonstrations introduce students to techniques and varied applications. (F,SP) Staff

142. New Genres. (4) Course may be repeated for credit. Three hours of lecture and six hours of studio per week. Prerequisites: 8, 12, and one from 13, 14, 16, 23, or equivalents. A survey intended to expose you to the nature and potential of such non-traditional tools for art-making as performance, video, and audiotape. Lectures and demonstrations introduce students to techniques and varied applications. (F,SP) Staff

160. Special Topics in Visual Studies. (4) Course may be repeated for credit. Three hours of lecture and three hours of laboratory per week. Prerequisites: Consent of instructor. Topics of concern to the instructor, usually related to current research, which may fall outside of the normal curriculum or be of more restricted content than regular studio courses. An opportunity to investigate topics and mediums on an ad hoc basis to suit the individual student's needs. There is no other course that deals with these concerns. Primarily intended for advanced undergraduates and graduates in Art Practice but open to others. For special requirements see listings outside of 238 Kroeber. (F,SP)

160A. Art, Technology, and Culture. (4) Two hours of seminar per week. This seminar is held in conjunction with the Art, Technology and Culture Colloquium, a lecture series that presents renowned artists, scientists and cultural theorists in the field of new media. The course will focus on discussion and critique of contemporary issues in the emerging digital medium that arise from the presentations of colloquium speakers. Emphasis will be placed on exploring common strategies and themes inherent in the research and creative work of these interdisciplinary artists, technologists, and theorists, and building conceptual tools for the critical analysis of their work. Students will be required to participate in colloquium and seminar discussions, do background research on speakers and related topics, and produce critical papers. (F,SP) Packard

165. Art, Medicine, and Disabilities. (4) Three hours of lecture and six hours of studio per week and/or supervised research and/or internship per week. This course will examine and understand how art can provide comfort and healing, as well as the expressive work of visual artists working from within the personal experience of disability. In other words, we will look at dis-
ability as both a subject and a source of artistic creation. Several topics, historical and contemporary, will be explored. Students will complete either a semester-long internship with an arts and disability organization, a research paper, or a creative project. (F,SP) Sherwood

170. Information Art: Database and Interface. (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 course will provide an overview of the history of digital art as it relates to the arts and sciences, especially the role of programming and coding in the production of art. The course will also cover new methods used in digital video production and are interested in further investigating critical, theoretical, and creative research topics in digital video production. Also listed as Film Studies C187. (F,SP) Staff

174. Advanced Digital Video. (4) Three hours of lecture and six hours of studio per week. Prerequisites: 8, 12, and 23; or equivalents. This advanced studio course is designed for students who have mastered basic skills and concepts involved in digital video production. Students will work in groups of three to develop a project that will engage them in the production of interactive projects for the Internet. The specific approach of the course is an exploration of the phenomenon of digital art, especially net art, from two vantage points. The first will focus on current or inherent aspects of digital art. These are aspects unique to the specific medium or subjects often explored in artworks of digital media such as tele-presence, hivemind, interactivity, etc. The second half will focus on the extended social life of digital art, tracing the journey of an artwork as it interacts with different social agents and external environments such as descriptions, commentaries, and promotion. 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 foundational understanding of 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 standard equipment, film and video history, theory, terminology, field and post-production skills. Students will be required to technically master the digital media tools introduced in the course. 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

175. Advanced Computer Graphics Production. (4) Three hours of lecture and six hours of studio per week. Prerequisites: 8, 12, and 23; or equivalents. Simulation of small, team-based CGI creative production environment based on skills developed in Art 160 (Computer Animation II) or FS Screenwriting. Complete projects will be presented at final PFAs screening, and work will be available for student animation reels. UCB will provide duplication services for all completed projects. 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

1795A-H195B. Special Study for Honors Candidates in the Practice of Art. (4,4) Course may be applied toward major requirements. Hours to be arranged. Prerequisites: 8, 12, and 23; or equivalents. This advanced studio course is designed for students who have mastered basic skills and concepts involved in digital video production. Students will be divided into groups of three to develop a project that will engage them in the production of interactive projects for the Internet. The specific approach of the course is an exploration of the phenomenon of digital art, especially net art, from two vantage points. The first will focus on current or inherent aspects of digital art. These are aspects unique to the specific medium or subjects often explored in artworks of digital media such as tele-presence, hivemind, interactivity, etc. The second half will focus on the extended social life of digital art, tracing the journey of an artwork as it interacts with different social agents and external environments such as descriptions, commentaries, and promotion. 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

180. Directed Group Study. (1-3) Course may be repeated for credit. Hours of group study per week. Prerequisites: 8, 12, and 23; or equivalents. This course is designed for students who have mastered basic skills and concepts involved in digital video production. Students will be required to technically master the digital media tools introduced in the course. 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

185. CGI Animation Studies. (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. Motion is a ubiquitous element of human experience, yet attempts to explain it remain incomplete. The representation of motion with techniques such as animation, development, and computational graphics with sculptural representations of celestial movements in antiquity and leading to dynamic computer graphics simulations of molecular processes today. In this production-intensive studio course, students will study computergraphics for motion simulations, or animations. We will also probe these tools for their use in creative expression and analyze their impact on our own perception of motion. Software used: Maya. 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

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 and papers in the fields of aesthetics, theory and art criticism. (F,SP)

290. Independent Study. (4) Course may be repeated for credit. Hours to be arranged. Prerequisites: Graduate standing and consent of instructor. Independent projects for graduate students with one assigned instructor. (F,SP) Staff

294. Seminar for M.F.A. Students. (4) Course may be repeated for credit. Three hours of seminar per week. Prerequisites: Admission to the M.F.A. program. Course may be repeated for credit. Pattern of studio work, emphasizing various aspects of form. Group criticism. Intended especially for M.F.A. candidates. (F,SP)

295. Independent Study for M.F.A. Students. (4-12) Course may be repeated for credit. Hours to be arranged. Prerequisites: Graduate standing and consent of instructor. Directed group study in special problems. Group research, and/or interdisciplinary topics. (F,SP) Staff

301. The Teaching of Art: Practice. (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. Utilizing aspects of pedagogical and andragogical teaching, the interactive lecture, collaborative learning, and brainstorming, this semester-long seminar will focus on these various integrative teaching approaches, to facilitate communication in the diverse and wide-ranging arena which is fine arts today. Discussion of course aims, instructional methods, grading standards, and special problems in the teaching of art practice. (F,SP) Staff

History of Art

Office: 416 Doe Library #6020, (510) 643-7290 http://www.lsb.berkeley.edu/dept/arthistory/
Chair: Whitney Davis, Ph.D.
Professors

Associate Professors
Patricia Berger, Ph.D. University of California, Berkeley. †Darcy Grimaldo Grigsby, Ph.D. University of Michigan. †Christopher Hallett, Ph.D. University of California, Berkeley. †Elizabeth Hong, Ph.D. Yale University. European art, 1400-1700 Gregory P. Levine, Ph.D. Princeton University. Japanese art

*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&Q requirement
AC suffix=satisfies American cultures requirement
*Professor of the Graduate School

Art and History of Art / 127
Major Program

The major provides an introduction to the history of the visual arts in western and Asian culture as well as the opportunity to do specialized study in areas of the student’s choice. Taking a multidisciplinary and fundamentally humanistic approach, the program provides majors with essential training in the perceptual, research, and critical skills required in many professions. Majors frequently go on to careers in the arts, law, or business as well as to graduate study in the history of art and careers in teaching, museum work, and conservation.

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: Asian, Ancient, Medieval, 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.

Honors 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 Honors Program. Candidates for honors 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 and an 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: Asian, 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 a 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 art history survey courses (11, 30, 31, 34, 35, 40, 41, 51, 52) as well as an upper division 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 degree 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 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 foreign 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 or before passing the minimum. Students must pass an examination to demonstrate English proficiency before they enroll as a time to improve language proficiency.

5. Graduate Division Requirements. Applicants are encouraged to become familiar with Graduate Division requirements 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 (1600-1800); Modern (1890 to present); (b) Students of Asian art: one upper division course or seminar in each of the three Asian areas (Japan, China, and India/SouthEast Asia), and at least two upper division courses in one or two of the areas of Western art listed above in (a). These requirements may be satisfied by previous course work at the undergraduate level.

2. Course Work. Ten courses selected to fulfill breadth requirements above (if necessary); at least five of these are graduate-level 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 M.A. thesis (History of Art 601). Additional courses may include upper division graduate seminars; the pro-seminar shall be taken in the first year and all other graduate seminars in the second. Students must satisfy both language requirements, and students in Asian art must have passed the M.A. language examination before entering the program or at the end of the second year. Ancient art students must satisfy their modern language requirement and be making good progress on their Greek or Latin requirement.

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 adviser. (b) Students of Asian art: One European 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 adviser). Students of the Ph.D. program are required to do 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 M.A. 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 wishes to serve as a thesis advisor, it must be submitted in accordance with Graduate Division regulations and be approved by a committee of three readers, two of whom will usually be members of the qualifying paper committee, and one of whom must be from another Berkeley department. Applications for candidacy for the master’s degree may be obtained from the Graduate Division or graduate student affairs office. Candidates for the M.A. degree must be filed on the first day of instruction in whichever semester the degree is 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 qualifying paper 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, in the form of a letter addressed to the graduate adviser, outlining work accomplished in Stage I and plans for Stage II, including field of concentration, and requesting permission to begin Stage II. Petitions are accepted four times a year.

(b) Post-M.A. transfer students must complete one year of course work, including at least two graduate seminars with department faculty. They also must be reviewed by the faculty in the fall semester of the second year; on review, the student submits a petition to begin Stage II, including field of concentration, and requesting permission to begin Stage II. The basis for this review will be the M.A. thesis (or equivalent) and course and seminar work during the first year at Berkeley.

6. Graduate Student Instructors (GSIs). Since teaching is considered an important part of graduate training, each student in the program will normally serve several times as an instructor. Applications for GSI appointments are distributed each spring, usually in March or April. Appointments are decided at a subsequent faculty meeting and are announced before the end of the spring semester. Entering students are normally not eligible during their first year, unless they have already had teaching experience elsewhere. To qualify as a GSI, students in all art subjects must have satisfied both language requirements, and students in Asian art must have satisfied one language requirement and be making good progress on their Greek or Latin requirement. Before teaching begins, all students must pass an examination to demonstrate English language proficiency.

7. Length of Stage I. For students in Western art and Ancient, two years; for Modern, two years, or two years and a summer; for Asian or Ancient art, three years. (Although it is not required, students should expect to spend summers studying languages, working on the qualifying paper, or travelling to study works of art.)

Requirements for Completion of Stage II of the M.A./Ph.D. Program

1. Dissertation Prospectus/Colloquium. As the first part of Stage II, a student prepares a written
4. Qualifying Examination. These additional language requirements are determined by the graduate adviser and the department. The Colloquium Committee consists of two or more faculty members from History of Art and one or more from a campus department outside the History of Art. Normally the Colloquium Committee is made up of four people. At the colloquium, the precise scope of the examination is also revealed and determined. This involves selection of a general field for the exams, special topics, and a related and outside subject, which together provide the appropriate background for dissertation research.

2. Registration Requirements. During Stage II students are expected to enroll for 12 units of course work each semester. To make up these units, students may enroll in lecture courses or seminars inside or outside the department; language courses in another art form (History of Art 296A for dissertation research); History of Art 299 (special study); History of Art 300 (taken in conjunction with GSI appointments); and History of Art 602 (individual study for the qualifying examinations).

3. Languages. More than two languages are often necessary for success in a student’s graduate field. These additional language requirements are determined by the graduate adviser in consultation with the student and the colloquium committee. For students in Medieval art, Latin and/or Greek is required.

4. Qualifying Examination. The examination is conducted by a five-member committee nominated by the student and advisers and appointed by the dean of the Graduate Division on behalf of the Graduate Division. This committee is nominated by the Colloquium Committee plus a chair from the department. The exam consists of one three-hour written part followed a few days later by an oral examination. The written examination involves consideration of specific works of art, sources, and the state of scholarship in the field. The examination tests the student’s basic knowledge of a general field, detailed knowledge in some part of it, and the ability to integrate studies in an appropriate outside field with the work in the History of Art. When the qualifying examination is passed and appropriate forms filed at the Graduate Division, the student is formally advanced to candidacy. The only further requirement is the dissertation.

5. Dissertation. The dissertation is a book-length study of a problem in the history of art written under the supervision of a dissertation committee. The dissertation committee is nominated by the graduate adviser following consultation with the student. It consists of three Academic Senate members from the Berkeley campus, one of whom must be from outside the department. Dissertations chapters should be submitted to the committee, together with appropriate illustrations, as they are written. Normally the committee must receive the entire dissertation, with illustrations, at least three months before the filing deadline.

6. Dissertation Writing Colloquium (History of Art 296). In order to break down the isolation of dissertation writing, establish dialogue among advanced graduate students, encourage productivity, and to provide better advice to students, the dissertation colloquium has been restructured. Each student, all students in residence who have passed the qualifying examination and have written at least a first chapter of their dissertation will be expected to enroll in the dissertation colloquium under the direction of the graduate adviser. The colloquium will meet at regular intervals throughout the academic year with appropriate faculty members. Enrollment in the colloquium is expected until at least two chapters have been presented (normally two semesters), but students are encouraged to enroll and present chapters until the dissertation is completed. Colloquium members also will be encouraged to take part in campus symposia such as the Berkeley Symposium.

7. Annual Review of Ph.D. Candidates. All doctoral students at the dissertation stage must meet annually with at least two members of the dissertation committee. The purpose is to review and evaluate the dissertation prospectus and to map out a plan for the next year. Students who are away from campus may complete the evaluation process by mail.

8. Length of Stage II. Good progress means one to three years of full-time study or four additional years for research and completion of the doctoral dissertation. Total time for Stage I and Stage II is six to seven years (seven to eight years for students of Asian or Ancient art).

For further information concerning the M.A./Ph.D. program, go to www.lsb.berkeley.edu/dep/arthistory/; or e-mail arhist@berkeley.edu.

Berkeley Art Museum

The Berkeley Art Museum plays an active role in instruction and student self-employment by providing opportunities for experience in connoisseurship and organization of exhibitions. See Berkeley Art Museum in the Index for further information.

Lower Division Courses

R1B. Reading and Writing about Visual Experience. (4) Three hours of lecture per week. Prerequisites: Subject of equivalent or former 4B. How do mechanisms of perception structure responses to visual art? What is at stake when words describe images? By means of intensive looking, thinking, speaking, and writing, this course introduces students to a series of problems and issues in the description and analysis of works of art. Because the course is also an introduction to the historical study of art, it will introduce students to the work in the field. Satisfies the second half of the Reading and Composition requirement. (F,SP) Staff

10. Introduction to Western Art: Ancient to Medieval. (4) Three hours of lecture and one hour of discussion per week. Prerequisites: May follow 1B or preceed 11, though neither is required. Formerly 10A. An introduction to the art of Egypt, Greece, Rome, and the European Middle Ages. Works of painting, sculpture, and architecture are presented chronologically and interpreted within their particular historical circumstances. The course focuses on themes such as the social and ideological functions of art, strategies of realism and abstraction, and the material and immaterial, patronage and the construction of viewing, etc. It enables students to acquire the perceptual and critical skills to enjoy, interpret, and question works of art. Like 11, this course is recommended for potential majors and for students in other disciplines, both humanities and sciences.

11. Introduction to Western Art: Renaissance to the Present. (4) Three hours of lecture and one hour of discussion per week. Prerequisites: May follow 1B or 10, though neither is required. Formerly 10B. An introduction to the historical circumstances and visual character of Western art from the Renaissance to the present. The course is designed to introduce the student to the major artists, periods, and problems of viewing and analysis. It is designed to provide new students with 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.

41. Introduction to Greek and Roman Art. (4) Three hours of lecture and one hour of discussion per week. An introduction to the art of Greece, designed for newcomers to the history of art or to the study of Chinese culture. Lectures will survey six millennia of Chinese artistic and intellectual history, including the burial arts of the Neolithic period through the Tang dynasty (4th M. BCE-10th C. CE), Buddhist and Daoist ritual arts, and painting and calligraphy. Lectures, readings, and discussions will introduce students to various systems of Chinese thought, modes of visual analysis, and art historical methods. (F,SP) Berger

35. Art and Architecture in Japan. (4) Three hours of lecture and one hour of discussion per week. An introduction to the art of Japan, designed for newcomers to the history of art or to the study of Chinese culture. Lectures will survey six millennia of Chinese artistic and intellectual history, including the burial arts of the Neolithic period through the Tang dynasty (4th M. BCE-10th C. CE), Buddhist and Daoist ritual arts, and painting and calligraphy. Lectures, readings, and discussions will introduce students to various systems of Chinese thought, modes of visual analysis, and art historical methods. (F,SP) Berger
51. Introduction to Medieval Art. (4) Three hours of lecture and one hour of discussion per week. A selective, thematic exploration of the visual arts from the decline 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 discussed against the ever-shifting historical circumstances of medieval Europe. Emphasis will be placed on the function and interpretation of the works, especially in relation to their 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, Mantua, this course will introduce most types of art and architecture produced in the Italian Renaissance—including city squares, 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 units. One and one half hours of seminar per week per unit for ten weeks. Two hours of seminar per week for one unit for four 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 of-fered 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 sopho-more. (F.S.P)

98. Directed Group Study for Freshmen and Sophomores. (1) Course may be repeated for credit. Three hours of work per week per unit. Must be taken on a pass/fail basis. Prerequisites: Consent of instructor. In the case of a group study on a topic initiated by those students. (F,SP)

Upper Division Courses

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, Vasiar) but also modern problems. Prerequisite: An introductory course in art history. (F.S.P)

Senior and upper division courses

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 Persia, Athens and the other major cities.

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

142. Art and the Body in Ancient Greece. (4) Three hours of lecture and one hour of discussion per week. This course considers key issues concerning the body in ancient Greek culture from a visual perspective. Topics include health and medical issues, athletes, women, and the dead in the public and private realm. In the context of visual sources in the Republican era to the Age of Constantine.

Course may be repeated for credit as topic varies. Three hours of lecture and one hour of discussion per week. (F,SP) Feldman

143. Art and the Body in Ancient Rome. (4) Three hours of lecture and one hour of discussion 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, two hours of seminar per week. Emphasis on the art and architecture of the Byzantine Empire, especially from the 8th to the 14th century. Topics include theory and development of the icon; iconoclasm; programs of mosaic decoration; imperial, monastic and private patronage; pictorial innovation; Byzantine art and the Renaissance in Europe.

155. Romanesque Art. (4) Three hours of lecture and one hour of discussion per week. The art and architecture of the Romanesque period, especially the 11th and 12th centuries. Artistic expression in the context of the culture and society of the time.

156A. Gothic Art in Northern Europe: 1150-1270. (4) Three hours of lecture and one hour of discussion per week. Gothic architecture and art of the 12th and 13th centuries in Northern Europe. (F.S.P) Rockwell

156B. Gothic Art in Southern Europe: 1270-1350. (4) Three hours of lecture and one hour of discussion per week. Gothic art and architecture of the south, especially France, Southern Europe and the Mediterranean. Structures and buildings of the period, especially the cathedrals, their art, architecture, and the artistic milieu.

160. Renaissance Art in Florence 1400-1600. (4) Four hours of lecture and one hour of discussion per week. The art of the Italian Renaissance in the city of Florence, from the early Quattrocento to the High Renaissance. Focus on the cultural, social, and political context of the period.

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 early Mesopotamia will be explored in terms of the social, political, and cultural context of ancient Sumer, Babylon, and Assyria. The development of visual narrative, the use of art in the expression of authority and legitimacy, and artistic interconnections in neighboring cultures. Collections on campus or in the area will be incorporated whenever possible. Also listed as Near Eastern Studies C120A.

C120B. The Art of Ancient Mesopotamia: 1000-330 BCE. (4) Three hours of lecture and one hour of discussion per week. The royal art and architecture of later Mesopotamia will be explored in terms of the social, political, and cultural context of the empires of Assyria, Babylon, and Persia. The course provides an integrated picture of the arts of Mesopotamia and neighboring regions from 1000-330 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 Near Eastern Studies C120B.

C121B. 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 treat in depth topics in Islamic art and topics within a particular ethnic or regional area, including painting, calligraphy, and book production. Also listed as Near Eastern Studies C121B. Open to nonmajors. General prerequisite: Upper division standing or consent of instructor. 

130A. Early Chinese Art, Part I. (4) Three hours of lecture and one hour of discussion per week. Chinese art of the Neolithic Age from the earliest period to the end of the Han dynasty (early third century A.D.), especially ceramics, bronzes, jade, and lacquer.

131A. Early Chinese Painting, (4) Three hours of lecture and one hour of discussion per week. The history of Chinese painting is traced from its beginnings in the late Chou dynasty through the Sung dynasty (4th century B.C. to ca. A.D. 1270), with concentration on the later periods (10th-13th centuries).

131B. Later Chinese Painting, (4) Three hours of lecture and one hour of discussion per week. The history of Chinese painting in the Yuan Ming, and early Ch'ing dynasties (14th-17th centuries).

134. The Arts of the Japanese Temple. (4) Three hours of lecture and one hour of discussion per week. Primarily the architecture and sculpture of Japanese Buddhist temples, 7th 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 handscrolls; and painting in the Zen milieu.

135B. Later Japanese Painting, (4) Three hours of lecture and one hour of discussion per week. The history of Japanese painting is traced from its beginnings in the late Chou dynasty through the Sung dynasty (4th century B.C. to ca. A.D. 1270), with concentration on the later periods (10th-13th centuries).

135C. 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 the (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 Hindu sculpture and architecture in India from the sixth to fourteenth 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 survey of Indian art and architecture 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.

140A. Minoan and Mycenaean Art. (4) Three hours of lecture and one hour of discussion per week. This course analyzes the art, architecture, and daily life of prehistoric Greece, concentrating on the Minoan and Mycenaean palatial arts of the Bronze Age (3000-1200 B.C.E). The evocative yet still enigmatic remains of clear rules and complex structures, frescos and vases and paintings, and precious worked pieces will be closely examined in terms of their forms and cultural contexts. The place of prehistoric Greece in the international context of the eastern Mediterranean will also be explored. Also listed as Near Eastern Studies C129. (F.S.P) Feldman

141. The Art of Ancient Greece. Three hours of lecture and one hour of discussion per week. In addition to the major works, particular emphasis upon their cultural context and upon key issues such as narrative strategies, gender and the body, modes of address in sculpture and painting, political propaganda in art, and the rise of the creative artist. Special attention, 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 Persia, Athens and the other major cities.

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

142. Art and the Body in Ancient Greece. (4) Three hours of lecture and one hour of discussion per week. This course considers key issues concerning the body in ancient Greek culture from a visual perspective. Topics include the issue of nakedness in Greek life and art; Athenian and Spartan ideologies of the body; Polykleitos' Doryphoros and Praxiteles' Kritian Aphrodite; the body as political metaphor; and the antisocial body.

143. Art and the Body in Ancient Rome. (4) Three hours of lecture and one hour of discussion 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.
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 the time. Included are the art of the Medici and Medici church. 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 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.

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, Memling, Bosch, Brueghel) up to the time of the iconoclasm of 1566. Focus on the relation of painting to the beholder; iconic vs. narrative images; rise of genres; art's expression of social and economic identity in the urban artists.

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 that expressed the ideas, aspirations, and identity of the first bourgeois capitalist society. Rembrandt, Vermeer, and other masters of contemporary aesthetic concerns (realism, optics) 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 (or created) by Sir Peter Paul Rubens, painter, scholar, 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 artistic tradition; art and politics; crafting social status; workshop practice.

176. European Art in the 18th Century. (4) Three hours of lecture and one hour of discussion per week. Topics from 18th-century European art, either focusing on the one art of one nation, for example, France, Spain or England, or introducing the art of Europe as a whole.

180A. Nineteenth-Century Europe: Age of Revolution. (4) Three hours of lecture and one hour of discussion per week. This course is designed to provide a thorough grounding in art history during the 19th-century European art, either focusing on a particular theme and/or nation (e.g. Romanticism and gender in France) 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 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. Formerly 192. Introduction to French art from the Revolution 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 photography, for example, photography in relation to modernism, gender, pictorial genres, or consumerism.

185A. American Art (1800-Pre-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 is a survey of the art and its social context over the two centuries in which 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 exemplary houses, both vernacular and high-style architectural forms are studied from the perspectives of the time. Architectural History and Theory will be part of the class. Also, as part of the class, each student will research a case study from the United States or Canada.

186A. In the Early 20th Century. (4) Three hours of lecture and one hour of discussion per week. Primarily Europe. May focus on a particular place and period (e.g., the Art Nouveau, the First World War) or on a major artistic problem (e.g., Abstraction 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 the post-war art of the present day. Emphasizes conceptual, video, and performance art, as well as traditional media.

187A. Problems in 19th-Century Sculpture. (4) Three hours of lecture and one hour of discussion per week. An examination of key issues, artists, and works, including the role of sculpture in urban space; relations to history and memory, technology, and commodification; uses of the body as a communicative vehicle, etc. Previous course work in history of art recommended.

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, and the body as a political and social tool. Previous course work in history of art recommended.

C189. 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, Environ Sci, Policy, and Management C191, and American Studies C112F. (F-SP) Lovell, McBride.

190. Special Topics in Field 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 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 190 course, please see individual instructor. Detailed descriptions of current and future offerings available in 416 Doe Library. This course satisfies the American cultures requirement. (F,SP) Staff

190B. Ancient. (4)

190C. Medieval. (4)

190D. 15th-16th Century. (4)

190F. 19th-20th Century. (4)

190G. American/British. (4)

190H. Precolombian/Latin American. (4)

191. Framing the Arts at UC Berkeley. (5.1) Two hours of lecture/screenings per week for three weeks for 1/2 unit. Two hours of lecture/screenings per week for six weeks for 1 unit. The focus of this course varies each time it is offered, focusing on 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 lifelong habits of involvement in and appreciation of the fine arts. (F-SP) Staff

192. Undergraduate Seminar: Problems in Research and Interpretation. Course may be repeated for credit. Three hours of seminar per week plus extensive outside work. Prerequisites: Primarily for juniors and seniors in the major or consent of instructor. Concentration on specific projects or works in a particular area of art history. Assigned readings, discussion, and a substantial paper. For specific topics and enrollment, see listings outside 416 Doe Library.

192A. Asian. (4)

192AC. Undergraduate Seminar: Folk Art in America. (4) Three hours of seminar per week plus extensive outside work. Prerequisites: Primarily for juniors and seniors in the major or consent of instructor. This seminar will look at specific case studies of the production and use of art, architecture, paintings, and quilting within specific communities in what is now the United States. We will look, for instance, at Shaker watercolors and design; Punnett painting and city planning; Amish, Hawaiian, and Hmong quilting; the ledger drawing and domestic structures of specific Native American groups; and the sacred architecture of the Hispanic Southwest. Our timeframe spans four centuries but our “geographies” will vary. We will consider vernacular or folk production within the context of politics and economics 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 sub-
194. Museum Internship. (4) Course may be repeated for credit. Ten hours of fieldwork per week plus meetings. Must be taken on a pass/no pass basis. Prerequisites: Approval of undergraduate advisor; 192H recommended. Study and practical professional experience, usually for no fewer than 10 hours per week, involving a substantial project of a curatorial nature. Jointly supervised by a member of the professional staff of the participating museum and a faculty member. Ordinarily must be arranged well in advance; for further information, inquire at 416 Doe Library. (F,SP)

H195. Special Study for Honors Candidates in the History of Art. (4) Individual conferences and thesis. Prerequisite: Senior standing and qualifying scholastic record (3.5 GPA in interdisciplinary major and 3.5 GPA in upper division courses completed in the major). Directed study leading to the completion of the honors thesis. Consult the description of the Honors Program in Art History. (F,SP)

C196W. Special Field Research. (10.5) Course may be repeated for a maximum of 12 units. 240-300 hours per semester plus regular meetings with the faculty supervisor. Students to work in selected internships 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 produce a final paper for each of the sections of no fewer than 30 pages. Other restrictions apply; see faculty adviser. Also listed as Undergraduate Interdisciplinary Studies C196W, Women’s Studies C196W, Mass Communications C196W, Political Science C196W, History C196W, Political Economy of Industrial Soc C196W, and Sociology C196W.

198. Supervised Group Study. (1-4) Course may be repeated for credit. Tutorial. Must be taken on a pass/no pass basis. Prerequisites: Consent of instructor. Prerequisites: Permission of the group of students on a topic initiated by those students. (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, major adviser and department chair. For students wishing to pursue an interest not represented in the curriculum by developing an individual program of study supervised by a faculty member. Study may involve readings, projects, papers, fieldwork, etc. For continuing or advanced research projects, see 193.

Graduate Courses

General prerequisites: Graduate standing and consent of the instructor, and possibly courses in the history of art and reading knowledge of languages.

200. Graduate Proseminar in the Interpretation of Art Historical Materials. (4) Course may be repeated for credit. Three hours of seminar per week. Prerequisites: Permission of the instructor and consent of instructor. An introduction to the fundamentals of art history, including traditional and innovative perspectives 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. (2,4) Course may be repeated for credit. Three hours of seminar per week plus extensive outside work. This seminar looks at both material culture theory and interpreting objects in the Western and Asia. It draws on the practices and inquiries of multiple disciplines including archaeology, anthropology, cultural geography, and art history. We will consider the various ways and contexts in which objects have been understood to “speak” as aesthetic vehicles and as cultural texts. Taught by two faculty members who have extensive experience as museum curators—one of American Art, the other of Asian Art, this class will combine theory with hands-on learning. (F,SP) Berger, Lovell

230. Seminar in Chinese 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.

234. Seminar in Japanese 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.

236. Seminar in the Art of India. (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.

240. Seminar in Ancient 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.

245. 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.

271. 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.

275. 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.

285. 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.

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.
Asian American Studies
(College of Letters and Science)

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 service 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. 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 for graduate 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

Note: Some of the courses included in the major curriculum are pending approval. Please consult the online catalog or a departmental adviser for further information.

The major in Asian American studies consists of 12 courses for a total of 48 units.

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

Upper Division.
Ethnic Studies 101A, 101B, and 103; completion of two elective courses, selected with the help of the student’s faculty adviser, from existing curriculum in history, community studies, and culture; Asian American Studies 195A and 195B; Asian American Studies 197 (4 units cumulative).

Honors. The Asian American Studies Program provides an option leading to the A.B. degree with honors. Students may 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 approved 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. Honors students must complete H195, 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 course work undertaken at the University.

The Minor

Note: Some of the courses included in the minor curriculum are pending approval. Please consult the online catalog or a departmental adviser for further information.

Requirements. The minor in Asian American studies consists of five upper division courses for a total of 20 units: Ethnic Studies 101A or 101B; completion of four upper division Asian American elective courses (not including Asian American Studies 197).

Lower Division Courses
R2A. Reading and Composition. (4) Three hours of lecture and one hour of tutorial per week. Prerequisites: 1, Subject A or equivalent. Formerly 2A. Through the study of the literary, political, and social psychological dimensions of representative works of Asian American literature, this course helps 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. (4) Three hours of lecture and one hour of tutorial per week. Prerequisites: 2A, English 4 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 among 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 present. Topics include an analysis of 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)

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 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: Priority given to freshmen and sophomores. Freshman and sophomore seminars offer lower division students a chance to gain a more in-depth understanding of 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 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 in the crucial second year. The topics vary from department to department and semester to semester. Enrollment limited to 15 sophomores. (F,SP)

97. Field Studies in Asian American Communities. (1-3) Course may be repeated for credit. Three hours of fieldwork per week per unit. Must be taken on a passed/not passed basis. Prerequisites: Restricted 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)

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 per unit. Must be taken on a passed/not passed basis. Prerequisites: Restriction to freshmen and sophomores; consent of instructor. Group study of selected topics which will vary from semester to semester. (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 Curriculum section of this catalog. Three hours of independent study per week per unit. Must be taken on a passed/not passed basis. Prerequisites: Consent of instructor. Individual research which leads to the writing of a major paper. Regular meetings with faculty sponsor. (F,SP) Staff

Upper Division Courses

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 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 influence of traditional 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 proseminar 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. Korean Americans 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 emigration; conditions in Hawaii and California and the Philippines; the Filipino laborer; community development; changing relations between the U.S. and the Philippines; effects of independence movement and World War II on Filipino Americans; and contemporary issues. (F,SP)

B prefix=language course for business majors
C prefix=course satisfies R&C requirement
AC suffix=course satisfies American cultures requirement
R prefix=course satisfies R&C and curricula section of this catalog
*Professor of the Graduate School
†Recipient of Distinguished Teaching Award
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 introduce students to the sociocultural, economic, educational, and political issues facing Southeast Asian refugees in the U.S. While the course focus is on the Asian American experience, references will be made to the pre-migration experiences and histories of the Southeast Asian refugee communities. (SP)

126. Southeast Asian Migration and Community Formation. (3) 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 Cambodia during the Vietnam War. It will also address the post-war "legacies" and their impact on the societies and politics of the three countries as well as neighboring 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 Contemporary 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 Asians from the early 19th century to the present. Development of South Asian American communities within the social, political and economic contexts of South Asia and the U.S. (SP)

129. Asians and Pacific Islanders in Hawaii. (4) Three hours of lecture and one hour of discussion per week. Prerequisites: 20A or equivalent. A course about the peoples of Hawaii from 1778 or the arrival of Captain James Cook to the present. A study of the society, culture, and economy of Hawaii in order to penetrate beneath the glamorous image of the islands. (SP)

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 introduction to 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 Asia-Pacific and the interplay of internal and external forces that shaped the Asian American experience and influenced the emergence and development of Asian American communities. (SP)

131. Asian Diaspora(s) from an Asian American Perspective. (4) Three hours of lecture and one hour of discussion per week. Analyzes the global presence of an Asian group with a significant U.S. population: migration/settlement history, community structure, class and economic status, and gender and generational relations in the Asian American family. (SP)

150. Gender and Generation in Asian American Families. (3) Three hours of lecture and one hour of discussion per week. Prerequisites: 20A or 20B. The influence of cultural legacy, ethnic background, immigration history, community structure, class and economic status, and gender on generation and the development of the Asian American family. (SP)

183. Korean American Literature. (4) Three hours of lecture and one hour of discussion per week. Prerequisites: Consent of instructor. Examines modern and contemporary Korean American writers from the immigrant generation to contemporary poets and novelists. Emphasizes identity and cultural issues in relation to the Korean American experience. (SP)

190. Seminar on Advanced Topics in Asian American Studies. (4) Three hours of lecture and one hour of discussion per week. Prerequisites: Consent of instructor. Critical readings of major Korean American literary work, including autobiographical fiction, poetry, short stories and novel, with attention to contemporary cultural and social issues. (SP)

190AC. Seminar on Advanced Topics in Asian American Studies. (1-3) Course may be repeated for credit as topic varies. Three hours of seminar per week. Prerequisites: Consent of instructor. Advanced seminar in Asian American Studies with topics to be announced at the beginning of each semester. (F,SP)

H195A-H195B. Senior Honors Seminar for Asian American Studies Majors. (1-3) Credit and grade to be awarded on completion of sequence. Prerequisites: Approval of faculty committee; 3.3 GPA on all University work and a 3.3 GPA in the major. Formerly H195. Research seminar for senior Asian American studies majors designed to support and guide the writing of a senior thesis. (F,SP) Staff

197. Field Study in Asian American Communities. (1-3) Course may be repeated for credit. Enrollment is restricted; see the introduction to Courses and Curriculum. Prior permission of this category is required. Three hours of field work per week per unit. Must be taken on a passed/not passed basis. Prerequisites: Consent of instructor. University organized and supervised field program involving experiences in schools, school-related activi-
ties, community, and community-related activities.

(F,SP) Staff

198. 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. Group study of selected topics which will vary from semester to semester. (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. 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 leads to the writing of a major paper. Regular meetings with faculty sponsor. (F,SP) Staff

Asian Studies

(College of Letters and Science)

Undergraduate Office: 101 Stephens Hall, (510) 643-5814
Graduate Office: 2223 Fulton Street, Room 524, (510) 643-0332
http://eas.berkeley.edu/gas/
Chair and Head Adviser: Bonnie C. Wade, Ph.D.
Advisers
Asian Studies (History)
Pradeep Chhibber (Political Science)
Jeffrey Hadler (South and Southeast Asian Studies)
You Tien Hsiung (Geography)

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 languages, and to develop an interdisciplinary perspective.

Prerequisite Courses in the Major

Students petitioning to enter the group major must have completed the following:


Additional Major Requirements

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

1. Two years of language appropriate to the area focus. After the second year, further study of the language at the upper division level is encouraged and will count toward the major unit requirement.
2. Completion of a minimum of 30 units of upper division course work.
3. Two courses must be in the same discipline.
4. One of the two must be a course whose primary purpose is to introduce the theories and methods of the discipline.
5. One upper division course must be in Asian history appropriate to the student’s area focus.
6. The remaining five courses needed to fulfill the 30-unit requirement may be selected from “other courses” and “inter-area courses.” Listed below at least one course must focus on a geographical region 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.
3. 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.
2. Disciplinary theory and methods course (choose one): Anthropology 114, 141, 144, 169B; 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 137, 148, 149B; Chinese 101, 102, 120, 132, 182, 1389; Economics 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, 106.
4. History requirement (choose one): History 100 (when on China), 103F (when on China); 116A, 116B, 116C.

Asian Studies
137B*, 137C*, 138B*, 138E, 143A-143B, 144A, 145B; Sociology 172*; South Asian Studies 124, 127, 128, 138, 140, 141, 143, 145; Southeast Asian Studies 122, 124, 128, 129, 130; South and Southeast Asian Studies C112, 141; Women’s Studies 141, 142.

These courses are appropriate when they include Asia in their curriculum.

In exceptional cases, individual waivers of specific course requirements for valid academic reasons will be considered with approval of the major adviser.

Optional Senior Thesis

Qualified students may complete a senior thesis approximately 50 pages in length under the supervision of the major adviser or other appropriate faculty member. Three units of upper division credit in Asian Studies 198 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 work and 3.6 or higher in the major. The program consists of completion of Asian Studies H195A-H195B (3.3), which includes the writing of a senior thesis. This 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, nor- mally 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 requirements are five upper division 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.

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. Interested applicants should contact the Group in Asian Studies for additional information.

Lower Division Courses

10A. Introduction to Traditional Asian Cultures. (4) Three hours of lecture and one hour of discussion per week. This course will cover the period from the earliest origins to around 1600 for South, Southeast, and East Asia. Emphasis will be on humanities and traditional history, although political and social history will

B prefix=language course for business majors
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R prefix=cross-satisfies R&J requirement
AC suffix=course satisfies American cultures requirement
*Professor of the Graduate School
†Recipient of Distinguished Teaching Award...
also be introduced, and the approach will be interdisciplinary. Religious traditions will be treated, along with geographical factors in the formation of agrarian societies, and the rise of urban centers. (F)

108. Introduction to Modern Asian Cultures. (4) Three hours of lecture and one hour of discussion per week. This course is designed to introduce students to the development and the impact of the mass media (news, film, television, radio) on specific areas or topics with appropriate comparison across national boundaries such as trade, development, colonialism, and urbanization will serve as unifying themes for five segments: India, Southeast Asia, China, Korea, and Japan. The course is designed to introduce students to the cultures early in their undergraduate studies. (SP)

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. (F, SP)

147. Inside Revolutionary China: Studies in Memoir, Fiction, and Film. (4) Three hours of lecture per week. Prerequisites: Consent of instructor. In this course students analyze events, policies, and institutions in China over the last half century through the revealing reports provided in memoirs, profiles, fictional narratives, literary reportage, and feature films. Texts chosen to coincide with the experience of the student from the War of Resistance against Japan (1937-1945) through the post-Mao decade and the suppression of the 1989 democracy movement. (F, SP) Wakeman

149. Media and Society in Contemporary China. (4) Three hours of lecture per week. Prerequisites: Consent of instructor. This course is an introduction to courses and discussion course examines the crucial role played by the news media in the establishment, perpetuation, and decline of Communist party authority in China. Students analyze the development of media over the last 30 years, especially the mass media (newspapers and magazines, radio and television) and the popular media (revolitionary operas, films, short stories, reportage, wall posters, cartoons, advertisements) from the period of the Communist victory and the Korean War through the period of the Cultural Revolution to the present. Readings focus on the changing role of the media in society, the relationship between news and propaganda, and the impact of new technology on information. (F, SP) Wakeman

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 comparison across national boundaries. Topics change each semester. (F, SP)

160. Undergraduate Seminar in Asian Studies. (4) Course may be repeated for credit as topic varies. Three hours of lecture 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 and grade to be awarded on completion of sequence. Prerequisites: Open to seniors in the major program in Asian Studies whose GPA is 3.5 or higher in all university work and 3.6 or higher in the major. Supervised readings or field research on a significant problem in Asian Studies, collection and analysis of research materials, and the preparation of an honors dissertation in close consultation with two members of the faculty. (F, SP)

196. Senior Thesis. (3) A maximum of 3 units of credit to be applied toward the major. May be repeated without credit toward the 36 unit major requirement. Individual study, One or two appropriate faculty advisers. Prerequisites: Consent of adviser. Open to seniors in the Group in Asian Studies. Individual conferences to be arranged with the major advisor or other appropriate faculty member for collection and analysis of research materials and preparation of the undergraduate thesis. (F, SP)

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

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. Group meetings to be arranged. Must be taken on a passed/not passed basis. Prerequisites: Upper division standing and consent of instructor. Directed 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. Fifteen hours of seminar per semester. Must be taken on a satisfactory/unsatisfactory 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

298. Directed Group Study. (2-6) Group meetings to be arranged. Must be taken on a satisfactorily/unsatisfactorily 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
Chair: Donald Backer, Ph.D.

University Professor
Frank H. Shu (Emeritus), Ph.D. Harvard University. Theoretical astrophysics, galactic dynamics, interacting binaries, star formation, solar-system formation, meteoritics

Professors
Jonathan Arons, Ph.D. Harvard University. High-energy astrophysics, pulsars, dark matter (Physics)
Donald C. Backer, Ph.D. Cornell University. Neutron stars, black holes, epoch of reionization, instrumentation
Gloria Bass, Ph.D. University of Colorado, Boulder. Star formation and activity, brown dwarfs
Leo Blitz, Ph.D. Columbia University. Star formation, galaxy structure, formation and evolution, radio astronomy
Josh Bloom, Ph.D. California Institute of Technology. Gamma ray bursts, transients, instrumentation
Eugene Chiang, Ph.D. California Institute of Technology. Star and planet formation, planetary dynamics, circumpolar disks and circumstellar disks (Earth and Planetary Sciences)
Marc Davis, Ph.D. Princeton University. Physical cosmology, dark matter, dark energy (Physics)
Mike E. Davis, Ph.D. University of Oregon. Galaxies, dark matter (Physics)
Izzy Fink, Ph.D. University of California, Los Angeles. Solar system, radio and infrared astronomy (Earth and Planetary Sciences)
Alessio Filippenko, Ph.D. California Institute of Technology. Supernovae, cosmology, black holes, active galaxies, gamma-ray bursts
James Graham, Ph.D. Imperial College, London. Interstellar medium, active galactic nuclei
Carl E. Heiles, Ph.D. Princeton University. Interstellar medium, magnetic fields
Raymond Jeanloz, Ph.D. California Institute of Technology. Planetary interiors and origins (Earth and Planetary Sciences)
Chung-Pei Ma, Ph.D. Massachusetts Institute of Technology. Cosmology, large-scale structure, dark matter
Geoff Marcy, Ph.D. University of California, Santa Cruz. Detection and study of extrasolar planets, planetary science, stellar activity
Christopher McKee, Ph.D. University of California, Berkeley. Interstellar medium, star formation
Eliot Quataert, Ph.D. Harvard University. Compact objects, accretion, galaxy formation
Martin White, Ph.D. Yale University. Physical cosmology, large-scale structure (Physics)
C. Stuart Bowyer (Emeritus), Ph.D. Catholic University of America. Ultraviolet astronomy from space
Ivan R. King (Emeritus), Ph.D. Harvard University. Structure of stellar systems, stellar populations
Leonard V. Kuch (Emeritus), Ph.D. University of California, Berkeley. T Tau Stars
Joseph I. Silk (Emeritus), Ph.D. Harvard University. Cosmology, galaxy formation, star formation
Hyron Spinrad (Emeritus), Ph.D. University of California, Berkeley. Origin and evolution of stars
Harold F. Weaver (Emeritus), Ph.D. University of California, Berkeley. Radio astronomy, interstellar medium, local interstellar medium
William J. Welch (Emeritus), (Alternet's Chair), Ph.D. University of California, Berkeley. Star formation, interferometry (Electrical Engineering and Computer Sciences)

Senior Lecturer
David D. Cudaback (Emeritus), Ph.D. University of California, Berkeley. Molecular astronomy

Adjunct Professors
Albert Glassgold, Ph.D. Massachusetts Institute of Technology. Interstellar medium, star formation, astrochemistry
Richard Keros, Ph.D. Brandeis University. Star formation, accreting X-ray sources, radiation dynamics, instellar medium

Department Overview

The Department of Astronomy offers undergraduate and graduate instruction in a wide variety of fields, including theoretical and observational astrophysics; infrared, optical, and radio astronomy; galactic structure and dynamics of stellar systems; high-energy astrophysics and cosmology; and spectroscopy. A considerable amount of research and teaching related to astronomy is done in other units at Berkeley, including the Space Science Laboratory, Lawrence Berkeley Laboratory, and the Physics Department. Various professors in the Chemistry, Earth and Planetary Science, Mathematics, Statistics, and Engineering departments have an active interest in astronomy and are available for consultation.

A variety of instruments is available to students and staff, including a 30-inch telescope at Leuschner Observatory (near the campus), two 10-meter telescopes at the Keck Observatory on Mauna Kea in Hawaii, 30-inch, 40-inch and 120-inch telescopes at Lick Observatory, a 16-element millimeter-wave interferometer in Southern California, and the Allen Telescope Array at the Hat Creek Radio Observatory. Laboratories are available for the development of radio, infrared, and optical instruments, and for the precise measurement of images and spectra.

The Major in Astrophysics

During the first two undergraduate years, students must, in addition to fulfilling certain specific requirements of the College of Letters and Science, prepare a plan of studies that will add emphasis to their work in astronomy or in other careers 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, and mathematics. 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) and two of the 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 & 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; 2) carry an independent research or study project, involving at least three units of H195. The student's project is chosen in consultation with a departmental adviser, and the written report is judged by the student's research supervisor and by a departmental adviser.

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 elective courses. 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. Entering students need not have majored in astronomy, although some background in the subject 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 preliminary examination which tests breadth and depth of the student's specialized research areas chosen by the student from a list of about 10. Students choose, with the advice of their advisor, courses in the department which are useful in preparation for the preliminary and qualifying examinations. In addition, students must pass two graduate courses taken outside the department and must acquire one year's teaching experience. The preliminary examination 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 of them in graduate courses) and the preliminary examination.

Lower Division Courses

3. Descriptive Cosmology. (2) Two hours of lecture per week. Prerequisites: 10 or consent of instructor. Non-mathematical description of research and results in modern extragalactic astronomy and cosmology. Davis, Ma

7A. Introduction to Astrophysics. (4) Students will receive 2 units of credit for 7A 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 the 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, both in the galaxy and the cosmic and galactic scope. The study of stars will treat determination of distances, properties of radiation and radiative energy transport; quantum mechanics of photons, atoms, and electrons; and magnetic fields. (F, Marcy, Quataert)

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 the 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. The course includes the use of 7A (mechanics and gravitation; kinetic theory of gases; properties of radiation and radiative energy transport; quantum mechanics of photons, atoms, and electrons; and magnetic fields) and adds the special and general theories of relativity. (SP, Marcy, Quataert)

9. Selected Topics in Astronomy. (2,3) Course may be repeated for credit. Two to three hours of lecture per week. Prerequisites: 7A-7B, 10, or consent of instructor. This seminar taught by graduate students will explore a variety of topics in greater depth than in introductory courses. Possible topics include stars, galaxies, the solar system, the interstellar medium, relativity and cosmology, history of astronomy, observational astronomy, and life in the universe. (F,SP, Staff)

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 modern astronomy with emphasis on the structure of stars, galaxies, the Milky Way, and the universe. Additional topics optionally discussed include quasars, pulsars, black holes, and extraterrestrial communication. Individual instructor's synopses available from the department. (F,SP, Staff, Marcy, Davis, Filippenko)

C10. Introduction to General Astronomy. (4) Students will receive no credit for C10 after taking 7A or 7B. Three hours of lecture and one hour of discussion per week. A description of modern astronomy with emphasis on the structure of stars, galaxies, and the universe. Additional topics optionally discussed include quasars, pulsars, black holes, and extraterrestrial communication. Individual instructor's synopses available from the department. Also listed as Letters and Science C70U. (F, Staff)

C12. The Planets. (3) Three hours of lecture per week. A tour of the planets and moons of the solar system, and an introduction to their internal structures, atmospheres, and surface features. Processes that form planets and act continually to change them (e.g., earthquakes, volcanoes, giant impacts) are discussed, and their effects are compared to those on Earth. Knowledge gained from recent spacecraft missions is highlighted. Intended for non-science majors. Also listed as Letters and Science C70T and Earth and Planetary Science C12. (F,SP)

24. Freshman Seminars. (1) Course may be repeated for credit as topic varies. Two to four hours of lecture per week. Section 1 to be graded on a pass/no pass basis. Section 2 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 in-depth 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. Seminar. (1.5) Two hours 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. A small-size undergraduate seminar exploring one astronomical topic in depth. Students are responsible for much of the presentation. (SP, Basri, Filippenko, Davis)

84. Sophomore Seminar. (1,2) Course may be repeated for credit as topic varies. One hour to two seminar hours per week for fifteen weeks. Two to four 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. This seminar offers advanced students 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 small classes. 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 to freshmen and sophomores. Prerequisites: At discretion of instructor. Topics will vary with instructor. (F,SP, Staff)

99. Directed Study in Astronomy. (1-3) Course may be repeated for credit. Must be taken on a pass/no pass basis. Prerequisites: Restricted to freshmen and sophomores; consent of instructor. Topics will vary with instructor. (F,SP, Staff)

100. Communicating Astronomy. (1-2) Course may be repeated for credit. Two hours of lecture per week plus time spent at K-12 schools. This course is for undergraduate or graduate students interested in improving their ability to communicate their scientific knowledge to the public and more specifically to K-12 students. The course covers science education and teaching methodology and pedagogy with six weeks of supervised teaching in local K-12 schools. The students will use materials developed from the Lawrence Hall of Science and other sources. The students will develop a demonstration of their own. They will receive feedback on their presentations. There will be some general discussion of the state and methods of science education. (F,SP, Staff)

120. Optical Astronomy Laboratory. (4) Four hours of discussion and one hour of lecture per week. Prerequisites: 7A-7B; Mathematics 53, 54; Physics 7A-7B-7C (7C may be taken concurrently). Formerly 120A. This course requires four to six experiments such as the following: accurate position measurements of stars with subsequent derivation of the diameter of the Earth and the refraction of the atmosphere; laboratory exploration of the characteristics of diffused reflection; measurement of the distance, reddening, and age of a star cluster; measurement of the Stokes parameters and linear polarization of diffuse synchrotron emission from radio sources; and interpretation of the period and shape pulse of the Crab pulsar using Fourier techniques. There is a heavy emphasis on error analysis, software development in the IDL language, and high-quality written reports. (F, Graham)

121. Radio Astronomy Laboratory. (4) Four hours of discussion and one hour of lecture per week. Prerequisites: 7A-7B; Mathematics 53, 54; Physics 7A-7B-7C; Physics 110B recommended. Formerly 120B. Several basic laboratory experiments that concentrate on microwave electronics and techniques; construction of
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receiving, observing, and data analysis systems for two radioastronomical telescopes, a single-dish 21-cm line system and a 12-GHz interferometer; use of these telescopes for astronomical observations projects including structure of the Milky Way galaxy, precision measurement of several radio sources, and measurement of the radio brightness distributions of the sun and moon with high angular resolution. There is a heavy emphasis on digital data acquisition, software development in the IDL language, and high-quality written reports. (SP) Backer, Blitz, Heiles

122. Infrared Astronomy Laboratory. (4) Four hours of discussion and one hour of lecture per week, Prerequisites: 7A-7B; Mathematics 53, 54; Physics 7A-7B-7C. Course consists of one basic laboratory experiment to explore the fundamental properties and characterize the performance of solid-state infrared photon detectors. This will be followed by three to five observational measurements using an infrared array detector on the instructional telescopes at Leuschner Observatory to study the Jovian planets; moons and rings; interstellar extinction and the colors of stars; stellar performance and using the infrared Tully-Fisher method to estimate distances to galaxies. (F) Graham, Marcy

160. Stellar Physics. (4) Four hours of lecture and one hour of discussion per week, Prerequisites: Senior standing in astronomy or physics or consent of instructor. Physics 7A-7B and Physics 105 (taken concurrently) and either Mathematics 110A-110B or Physics 137A-137B. Formerly C160A and Physics C160A. Observational constraints on the properties and evolution of stars. Theory of stellar structure and evolution and stellar spectral characteristics. Evolution of high and low mass stars; supernovae. Degeneracy of matter and structure of collapsed stars. Elements of gas dynamics, accretion onto compact objects, and x-ray sources. Dynamics and evolution of close binary systems, either stellar pulsation or formation. (F) Arons, Backer, Filippenko, Marcy

C161. Relativistic Astrophysics and Cosmology. (4) Four hours of lecture and one hour of discussion per week, Prerequisites: 110A-110B; Mathematics 110A-110B; 137A-137B. Formerly C161A and Physics C161B. Elements of general relativity. Physics of pulsars, cosmic rays, black holes. The cosmological distance scale, elementary cosmological models, properties of galaxies and quasars. The mass density and age of the universe. Evidence for dark matter and concepts of the early universe and of galaxy formation. Reflections of these ideas as a probe of the physics of the universe. Also listed as Physics C161. (SP) Arons, Boggs, Davis, Holzapfel, A. Lee, Ma, Quataert

C162. Planetary Astrophysics. (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, 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

169. The Origin of Galaxies and the Universe. (3) Three hours of lecture per week, Prerequisites: 7A-7B recommended; Mathematics 54; Physics 7A-7B-7C. Formerly 127C. This course covers the largest topics in astronomy: the study of galaxies and the universe as a whole. It includes the modern story of creation, beginning with the expansion of our Universe, its early hot-dense phase when the light elements were formed. A discussion of normal and active galaxies including their formation and evolution. Quasars and their utility in illuminating the early Universe at high redshift. The discovery of Dark Matter by its effect on the motion of galaxies and its gravitational lensing effect and its role in the formation of large-scale structure. (SP) Ma, Spinrad

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

196. Directed Group Study. (1-4) Course may be repeated for credit. Enrollment is restricted; see the Instructor's permission. Three hours of lecture per week may 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 Instructor's permission. Three hours of lecture per week may be taken on a passed/not passed basis. (F-SP) Staff

Graduate Courses

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, with emphasis on energy transfer by radiation. Elements of classical and quantum theory of photon emission; 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, Welch

202. Astrophysical Fluid Dynamics. (4) Three hours of lecture per week, Prerequisites: 201. Formerly 201B. Principles of gas dynamics, magnetohydrodynamics and elementary kinetic theory with particular emphasis on ionized gases (plasmas). Aspects of convection, shock waves, high speed winds of astrophysical relevance and wave phenomena. Concepts of high energy particle acceleration and collective phenomena in stellar systems. (SP) Graham, Quataert

203. Astrophysical Techniques. (3) Three hours of lecture per week and frequent laboratory work plus observatory visits, Prerequisites: 201 and 290A; 290B must be taken concurrently. Introduction to the flow of astronomical signals through telescope optics and into detectors; subsequent calibration, deconvolution of instrumental artifacts, and analysis. A broad wavelength approach is maintained with focus on shared fundamental concepts. Students "adopt a wavelength band" for assignments and presentations. Analysis and simulation of astronomical signals, noise, and errors. (SP) Staff

204. Numerical Techniques in Astronomy. (3) Three hours of seminar per week, Prerequisites: Mathematics 54. Methods of data 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 and elementary kinetic theory with particular emphasis on ionized gases (plasmas). Aspects of convection, shock waves, high speed winds of astrophysical relevance and wave phenomena. Concepts of high energy particle acceleration and collective phenomena in stellar systems. (SP) Staff

216. Interstellar Matter. (3) Three hours of lecture per week, Prerequisites: 201. A survey of the observational data and theoretical ideas on the interstellar medium, with emphasis on the infrared physical conditions. (F) Blitz, Heiles, Glassgold, Graham, Shu, Welch

217. Stellar Atmospheres. (3) Three hours of lecture per week, Prerequisites: 201. Spectral characteristics of normal and peculiar stars. Interpretation via model atmosphere, line profiles, curve of growth, etc. Line and continuous opacity, line-blanketing, convection, non-LTE, extended atmospheres. Current problem areas. Basri, Marcy

218. Stellar Dynamics and Galactic Structure. (3) Three hours of lecture per week. A basic course on stellar dynamics and kinematics of the galaxy; stellar population concepts; dynamics of stellar systems with and without encounters. (F) Blitz, Davis, Graham

C228. Extragalactic Astronomy and Cosmology. (3) Three hours of lecture per week. A survey of physical cosmology including structure in the universe, inflation in the early universe, big bang nucleosynthesis, the dynamics and formation of galaxies and large scale structure, the anisotropy of the cosmic microwave radiation, galaxy evolution, tests of cosmological models and current problem areas. The course complements the material of Astronomy 218. Also listed as Physics C229. (F) Davis, Holzapfel, Lee, Ma, White

C249. Solar System Astrophyics. (3) Three hours of lecture per week, Prerequisites: 149, 169, C160A or consent of instructor. The physical foundations of solar system astronomy. Topics include the solar nebula and the formation of the planets, planetary interiors and surfaces, planetary atmospheres and magnetospheres, and smaller bodies in the solar system. The physical processes at work are explored in some detail, and the properties and structure for each class of objects is expounded. Some discussion of other (potential) planetary systems is also included. Also listed as Earth and Planetary Science C249. (F) Chang, de Pater, Jeanloz

250. Special Topics in Astrophysics. (3) Course may be repeated for credit. Three hours of lecture per week, Prerequisites: Consent of instructor. Topics 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. Equations of stellar structure, radiative transfer and convection, thermonuclear 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. Basic physics of high energy radiation processes in an astrophysical environment. Compton scattering and 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 a state-of-the-art approach to astrophysics, self-gravitational gas dynamics with application to large scale simulation of coupled non-linear astrophysical flows. Finite-difference approaches for Lagrangian and Eulerian astrophysical hydrodynamics and coupled radiation-hydrodynamics. N-body gravitation techniques including direct N-body, P-M, P3M and hierarchical Tree. Particle gas dynamics methods such as Smooth Particle Hydrodynamics (SPH), Adaptive SPH and unification of SPH and Tree hierarchies (TREE-SPH). Advanced techniques such as higher order finite difference hydrodynamics with Adaptive Mesh Refinement (AMR). Applications of these approaches in the broad areas: Cosmology; High Energy Astrophysics and the Interstellar Medium. (SP) Klein, White

267. Plasma Astrophysics. (3) Three hours of lecture per week, Prerequisites: 201 recommended. Application of magnetohydrodynamics and plasma physics to astrophysical problems. Topics will be chosen from magnetospheric physics, solar and stellar flares and winds, mhd dynamos, pulsars, x-ray sources, supernovae and supernova remnants, and cosmic rays and active galactic nuclei. Arons

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 Physics C285. (F-SP) Arons, Chiang, Quataert

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. (F) 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 student 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. Physics C290C. (F-SP) White, Cohn
130A, and technical elective. Of the upper division core or elective courses, at least two must have substantial biology content. Clinical, design, statistics and ethics content must be taken in at least one course, chosen from an approved list. One course may satisfy multiple content requirements.

Bioengineering Minor

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

Guidant Bioengineering Summer Research Program

The Guidant Bioengineering Summer Research Fellowship is a sponsored internship program for students performing research in bioengineering. Students are selected each summer in a competitive application process to participate in funded research projects with department faculty. The aim is for students to join a research lab and perform full-time research over a 10-week period during the summer. The culmination of the program is the annual symposium, during which students present the results of their summer project to faculty, students, and industry representatives.

The Guidant Corporation, a world leader in the design and development of cardiovascular medical products, donates substantial funds annually to support the Guidant Fellowship. Each year since summer 2004, each student participant received a $3,200 fellowship and the opportunity to work closely with a faculty mentor. More information is available at http://bioeng.berkeley.edu/guidant/.

Graduate Study

Graduate Group Executive Committee: Tom Budinger, M.D., Ph.D., Theodore E. Cohn, Ph.D. (ex officio), Song Li, Ph.D., Giani Liepmann, Ph.D. (Co-Chair), Sarah Nelson, Dr. rer. Nat (ex officio), Christof Schreiner, Ph.D. (Chair), Dan Vigneron, Ph.D.

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 emphases of the engineering and other fields: civil engineering and environmental sciences; mechanical engineering and manufacturing, chemical engineering, and bioengineering; electrical engineering and computer science; biological sciences and computer science; and other specialties related to engineering in the pharmaceutical/biotech field. A series of one-hour seminars will be presented by industry professionals, professors, and doctors in their particular research areas.

25. Careers in Biotechnology. (1) One hour of seminar per week. Must be taken on a pass/fail basis. This introductory seminar is designed to give freshmen and sophomores a glimpse of a broad selection of bioengineering research that is currently underway at Berkeley and UCSF. The goal is to help students gain a feeling for the breadth of interesting problems in bioengineering and also the variety of ways that engineering principles can be applied to biological and biomedical problems. A series of one-hour seminars will be presented by researchers, professors, and doctors on their particular research areas. (F.S.P) Liepmann

24. Aspects of Bioengineering. (1) Course may be repeated for credit. One hour of seminar per week. Must be taken on a pass/fail basis. This introductory seminar is designed to give freshmen and sophomores a glimpse of the breadth of bioengineering research that is currently underway at Berkeley and UCSF. The goal is to help students gain a feeling for the breadth of interesting problems in bioengineering and also the variety of ways that engineering principles can be applied to biological and biomedical problems. A series of one-hour seminars will be presented by researchers, professors, and doctors in their particular research areas. (F.S.P) Liepmann

115. Cell Biology Laboratory for Engineers. (4) Three hours of laboratory per week. Coreq: 102 or consent of instructor. Three hours of laboratory per week. Prerequisites: 101. Biomechanics. (4) Three hours of lecture and one hour of discussion per week. Coreq: 102 or consent of instructor. Three hours of laboratory per week. This course introduces the main concepts related to the mechanics and material behavior of biological systems. Emphasis is placed on development of a fundamental mathematical understanding of the key engineering principles and their application to biological systems. Examples of engineering concepts covered include statics and dynamics of solids and fluids; material behavior including elasticity, viscoelasticity, fatigue, and failure; kinematics, dynamics, and control theory; scaling laws and complexity; and uncertainty. Applications, examples, and assignments will elucidate normal and pathological human physiology, as well as diagnosis and treatment of major clinical problems. A series of mini-projects, some of which will be computational assignments, will integrate the course material in an attempt to gain insight into more complex problems. Working in small teams, students will also make a poster or oral presentation to the class on a topic of their choice. (F.S.P) Keaveny

101. Instrumentation in Biology and Medicine. (4) Three hours of lecture and one hour of discussion per week. Prerequisites: Engineering 100, Mathematics 53, 54, Physics 7A-7B, or consent of instructor. Three hours of lecture and one hour of discussion per week. Prerequisites: Engineering 100, Mathematics 53, 54, Physics 7A-7B, or consent of instructor. This course teaches the fundamentals and principles underlying modern instrumentation used in biology and medicine. Organized around three classes of instruments—bioelectronics, optoelectronics, medical imaging—the course combines an integrative approach to theory and practice by presenting and analyzing example instruments currently used for biological and medical research. For each instrument, students will learn the fundamentals of operation, methods of control, mechanisms of contrast, devices for detection, and methods for signal processing and error estimation. Current biological questions and medical problems investigated with each type of instrument will be discussed. (F.S.P) Conolly, D. Fletcher

Course Materials Fee

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

Upper Division Courses

102. Biomechanics. (4) Three hours of lecture per week. Prerequisites: 101. Introduction to tissue engineering, the conduct of research, in publication, in disclosures private and public, and in managing conflicts both professional and financial. The topics include bioethics, human genetics, information ethics, in addition to professional research and engineering ethics. The method is through historical didactic presentations, case studies, presentations of new research methods for potential applications, and case studies, and classroom debates on contemporary ethical issues. The guest lecturers will be drawn from faculty from religious studies, journalism, and law from the UC Berkeley. (F.S.P) Budinger

101. Instrumentation in Biology and Medicine. (4) Three hours of lecture and one hour of discussion per week. Prerequisites: Engineering 100, Mathematics 53, 54, Physics 7A-7B, or consent of instructor. This course teaches the fundamentals and principles underlying modern instrumentation used in biology and medicine. Organized around three classes of instruments—bioelectronics, optoelectronics, medical imaging—the course combines an integrative approach to theory and practice by presenting and analyzing example instruments currently used for biological and medical research. For each instrument, students will learn the fundamentals of operation, methods of control, mechanisms of contrast, devices for detection, and methods for signal processing and error estimation. Current biological questions and medical problems investigated with each type of instrument will be discussed. (F.S.P) Conolly, D. Fletcher

115. Cell Biology Laboratory for Engineers. (4) Three hours of lecture and six hours of laboratory per week. Prerequisites: Molecular and Cell Biology 110 or 130. The structural and functional characteristics 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 structural form, function, and longevity involves knowledge of tissue ultra structure, composition of matrix, and cell function. Students will be introduced to cellular and molecular biology and biochemistry techniques applied to musculoskeletal biology, including histology, image analysis, protein quantification, gene analysis and expression, and cell culture. By applying these techniques to structural tissues in the laboratory, students can learn the relevance and limitations of these tools. (F.S.P) King, Rempel

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 engineering, analysis of cellular process, and cell engineering.
neering. Topics include bioreactor and mass transport, transplantation, artificial tissues, cell-matrix interaction, cell migration and cell mechanics, cell proliferation, stem cells, and cell manipulation. (SP) Lj

C117. Structural Aspects of Biomaterials. (3) Three hours of lecture and one hour of discussion per week. Prerequisites: 14, Engineering 130 or Civil Engineering 130. This course covers the mechanical and structural aspects of biological tissues and their replacements. Tissue structure and mechanical function are discussed. Macro- and micro-scale loads on biomaterials for clinical and medical applications are reviewed. Biocompatibility of biomaterials and host response to structural implants are examined. Quantiﬁcation of biomaterials and constitutive relationships of tissues and biomaterials are covered. Material selection for load-bearing applications including reconstructive surgery, orthopedics, dentistry, and tissue engineering. Mechanical design and longevity including topics of fatigue, wear, and fracture. Use of biorsorbable implants and hybrid materials. Directions in tissue engineering. Also listed as Mechanical Engineering C117. (SP) Pruitt

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 and background of knowledge to be connected to biomedical materials selection and design. Structure-property relationships of biomedical materials and their interactions with biological systems will be addressed. Application of the concepts developed in this course 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. (3) Three hours of lecture and one hour of discussion/computer workshop per week. Prerequisites: Civil Engineering 130. For: undergraduate Mechanical Engineering students. This course will cover the analysis of engineering 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 tissues including bone, cartilage, tendon, ligament, and muscle; osteoporosis and fracture-risk prediction of bones; and bone adaptation. Students will be challenged in a lab setting to integrate the course materials in an attempt to gain insight into contemporary design/analysis problems. Also listed as Mechanical Engineering C176. (SP) Kevern

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 nanoscale devices for the manipulation of cells and biomolecules. Topics include solid-state transducers, optical transducers, electrochemical transducers, biophysical microelectronics, micromanipulation and integration of microfabrication technology. (F.S.P) Lee, Liepmann

121L. BioMEMs and BioNanotechnology Laboratory. (4) Six hours of laboratory and two hours of lecture per week. Prerequisites: 121, Chemistry 130A, Electrical Engineering 141, Mechanical Engineering 106, or Chemical Engineering 106, or Chemical Engineering 150A. Hands-on project experience in applying microfabrication techniques to problems in biotechnology using the latest micro- and nanofabrication techniques. Experimental design and analysis of micro- and nanodevice interface devices. Students will give poster sessions and oral presentations on their results. (F) L. 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, sensing, and the programming of robots. The course will cover forward, inverse kinematics of serial chain manipulators, force control, dynamics and control relations, dynamics and control-position, and force control. Trajectory generation, collision avoidance, automatic planning of fine and gross motion strategies, robot products, sensory systems, tactile, and force sensing. Network modeling, stability, and ﬁdelity in teleoperation. Biological analogues and medical applications of robotics. Also listed as Electrical Engineering C125S. (F.S.P) Sastry, Tendick

131. Introduction to Computational Molecular and Cell Biology. (4) Three hours of lecture 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 in computational biology, and approaches and techniques to gene structure and ﬁnding, sequence alignment using dynamic programming, protein folding and structure prediction, protein–drug interactions, genetic and biochemical pathways and networks, and microarray analysis. Various case studies in these areas are reviewed and web-based computational biology tools will be used by students. Computational biological research connections to biotechnology will be explored. (F.S.P) Head-Gordon

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 concepts such as basic probability, expectation and variance, expression analysis, data analysis, molecular evolution models, and biomolecular sequence database searching. Introduction of the necessary probability and statistics: event, conditional probability, random variables, estimation, testing, and linear regression. Also listed as Statistics C141. (F.S.P)

142. Programming and Algorithm Design for Computational Biology and Genomics Applications. (4) Three hours of lecture and two hours of discussion per week. Prerequisites: Math 54 and Molecular and Cell Biology 102; Engineering 77, or Computer Science 61A, or Computer Science 61B or consent of instructor. This course will introduce students to structured software development and select principles of computer science with applications in computational biology and allied disciplines. The principle language used for instruction will be Java with a module on Perl. Examples and tutorials will draw from problems in computational biology. The course will require one signiﬁcant programming project, preferably biologically oriented. (F.S.P) 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, mathematical 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 design, and enzymology. Core Specialization: Core B (Genomics and Informatics); Core D (Computational Biology); Bio/E Content: Biological. (F.S.P) Head-Gordon

144. Introduction to Protein Informatics. (4) Three hours of lecture and two hours of computer laboratory per week. Prerequisites: Molecular and Cellular Biology 100 or 102. 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 and structure. It is designed to impart both a theoretical understanding of popular computational methods and practical hands-on experience with them. Protein informatics methods are applied to real data. (F.S.P) Sjolander

C145L. 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 and of the microcomputer environment. (F,SP) C145M. Introductory Microcomputer Interfacing Laboratory. (3) Two hours of lecture and three hours of laboratory per week. Prerequisites: Electrical Engineering 40, Computer Science 61A or a working knowledge of ANSI C programming. This laboratory course will introduce students to the fundamentals of microelectronic design and computer programming. Topics include the fundamentals of microcomputer-based systems for data acquisition, analysis and control. Also listed as Electrical Engineering C145M. (F) Derenzo

145. Topics in Computational Biology and Genomics. (4) Three hours of lecture and one hour of discussion per week. Prerequisites: Computer Science 9C or 9E or Engineering 77, or equivalent ability to write programs in Java, Perl, C, or C++; Molecular and Cell Biology 100, 102, or equivalent; or consent of instructor and instructor is in genomics and computational biology. Working from evolutionary concepts, the course will cover principles and application of molecular sequence comparison, genome sequencing and annotation, and phylogenetic analysis. Also listed as Molecular and Cell Biology C146 and Plant Biology C146. (SP) Breen, Eisen

153. Principles of Bioengineering. (4) Three hours of lecture and one hour of discussion per week. Prerequisites: Chemistry 3A, 3B, 7A, 7B; junior standing. Formerly C153. Engineering C153. Basic analytical tools and applications in bioengineering. Topics selected from biomechanics, physiology, fluid mechanics, and biological fluid transport, physiological mass transport, biological network modeling, and physiological control system. (F.S.P) Liepmann

155. Introduction to Bioastronautics. (4) Three hours of lecture and one hour of discussion per week. This course aims to bring students into the world of space science related research including bioastronautics and high altitude human physiology. Students will gain a strong knowledge base of specific space science 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, hypoxia, radiation, space deconditioning, and space medicine. (F.S.P) Budinger

164. Optics and Microscopy. (3) 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 the fundamental principles of contemporary methods of optical microscopy for cells and molecules. Students will learn how to design simple optical systems, calculate system performance, and use computer modeling techniques for interference, phase, and fluorescence microscopy to investigate biological samples. The capabilities of optical microscopy will be compared with complementary imaging techniques such as electron microscopy, coherence...
tomography, and atomic force microscopy. (F,SP) Fletcher

C115, 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. Use of MATLAB 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 biomedical 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 C115B. (SP) Budinger

190. Advanced Topics in Bioengineering. Course may be repeated for credit. One to four hours of lecture per week. Sections may be graded to be given on a letter-grade basis. Sections 4-6 to be graded on a pass/no pass basis. Prerequisites: Consent of instructor. These courses cover current topics of research interest in bioengineering. 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 Biomechanics. (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)

H194. Honors Undergraduate Research. (1-4) Course may be repeated for credit. Variable format. Prerequisites: Upper division technical GPA 3.3 or higher and consent of instructor and advisor. Students who have completed a satisfactory number of advanced courses 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 bioengineering program. Final report required. (F,SP) Staff.

188. 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 of a selected topic 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 satisfactory/unsatisfactory basis. Prerequisites: Enrollment in PhD Program in Biomedical Engineering. Course of instructor. An introduction to research in bioengineering including specific case studies and organization of this rapidly expanding and diverse field. (F) Staff.

C212. 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

C213. Fluid Mechanics of Biological Systems. (3) Three hours of lecture per week. Prerequisites: Mechanical Engineering 106, or equivalent, or consent of instructor. Fluid mechanical aspects of various physiological systems: circulatory, respiratory, and renal systems. Motion in large and small blood vessels. Pulsatile and peristaltic flows. Other biophysical mechanical flows: the eye, ear, eye, etc. Instrumentation for fluid flow measurements in biological systems and medical diagnosis and applications. Artificial devices for replacement of organs and/or functions, e.g. blood oxygenators, kidney dialysis machines, artificial hearts/circulatory assist devices. Also listed as Mechanical Engineering C213. (F) Berger

C214. Advanced Tissue Mechanics. (3) Three hours of lecture and one hour of discussion per week. Prerequisites: C176, 185; standing graduate student or consent of instructor. Knowledge of MATLAB or equivalent. The and biological systems for therapy and diagnosis by 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 basis, we will explore 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 most biological tissues. Formal discussion section will include a seminar series with external speakers. Also listed as Mechanical Engineering C214. (SP) Staff.

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 selection and function of polymers used in biotechnology and medicine. Principles of polymer science, polymer structure-property-performance-relationships of polymers. Particular emphasis is placed on the performance of polymers in biological environments. Interactions between macromolecular scaffolds and cells. Specific applications will include drug delivery, gene therapy, tissue engineering, and surface engineering. Also listed as Materials Science and Engineering C216, (SP) Healy

C223. Polymer Engineering. (3) Three hours of lecture and one hour of discussion per week. Prerequisites: Civil Engineering 130, Engineering 45. A survey of the structure and mechanical properties of advanced engineering polymers. Topics include rubber elasticity, viscoelasticity, mechanical properties, yield, deformation, 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 Mechanical Engineering C223. (F) Staff.

231. Introduction to Computational Molecular and Cellular Biology. (4) Students will receive no credit for C231 after passing C231A and one hour of discussion per week. Prerequisites: Mathematics 53 and 54, and either Computer Science 61A or 61B or Engineering 77. Topics include computational approaches and techniques to gene structure and finding, sequence alignment using dynamic programming, protein folding and structure prediction, protein-drug interactions, genetic and biochemical pathways and networks, and microarray analysis. Various case studies in these areas are reviewed and web-based computational biology tools will be used by students. Computational biology research connections to biotechnological processes. Credit will be based on attendance content: fulfills biological and statistical requirement. Bioengineering Breadth, Core B (Informatics and Genomics) and Core D (Computational Biology). (F,SP) Head-Gordon

243. Computational Methods in Biology. (4) Students will receive no credit for 243 after passing 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, mathematical 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, and enzymatics will be covered. Core Specialization: Core B (Informatics and Genomics); Core D (Computational Biology); Bioengineering Content: Biological. (F,SP) Head-Gordon

C246. Topics in Computational Biology and Genomics. (3) Three hours of lecture, one and one-half hours of paper review, and discussion per week. Prerequisites: 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 Plant Biology C246 and Molecular and Cell Biology C246. (SP) Brenner, Eisen

C279. Occupational Biomechanics. (4) Three hours of lecture/lab/work per week. Overview of ergonomics and occupational biomechanics. Course covers pathophysiology and risk factors of upper extremity and back loading and work, measurement of postures, models for risk assessment, anthropometry applied to task and workstation design, tool design, and structure of successful ergonomics programs. Students will conduct a detailed job analysis and design a workplace in intervention. Also listed as Public Health C269. (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)

290C. Advanced Topics in Micromachines and Robotics. (1-3) (F,SP)

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

290E. Advanced Topics in Neural and Sensory Systems Bioengineering. (1-3) (F,SP)

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

290G. Advanced Topics in Biomedical Engineering. (1-3) (F,SP)

290H. Advanced Topics in Radiological Bioengineering. (1-3) (F,SP)

290I. Advanced Topics in Biomedical Systems Engineering. (1-3) (F,SP)

290J. Advanced Topics in Special Topics in Bioengineering. (1-3) (F,SP)

288. 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 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 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. Investigations of advanced problems in bioengineering. (F,SP) Staff.
Biology
( College of Letters and Science or College of Natural Resources)

The three interdepartmental biology courses provide a broad, 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.

Biology 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) Bi may be taken before 1A. Three hours of lecture and one hour of discussion per week. Prerequisites: Chemistry 3A or 119A. BI 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

11L. Introduction to the Science of Living Organisms. (3) Students will receive credit for 1L 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, 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 required but not assumed. Sponsoring faculty (F) 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. Laboratory designed to accompany Biology 11. Introduction to the Science of Living Organisms. Weekly laboratory exercises and one field trip to the UC Berkeley Botanical Garden. (SP) Jones, Quail
Biostatistics
(College of Letters and Science and School of Public Health)

Group Major Office: 101 Haviland Hall, (510) 642-3241
Mailing Address: 140 Warren Hall #7360
Chair: Nicholas J. Jewell, Ph.D.

Professors
Peter J. Bickel, Ph.D. University of California, Berkeley.
Nonparametric inference, asymptotic methods
David R. Brillinger, Ph.D. Princeton University. Random process data analysis
*Chin Long Chang, Ph.D. University of California, Berkeley.
Stochastic processes, life tables
Kjell A. Doksum, Ph.D. University of California, Berkeley.
Nonparametrics, survival analysis
Nicholas P. Jewell, Ph.D. University of Edinburgh.
Semiparametric methods and survival analysis
*Johnstone, Ph.D. Cornell University. Wavelets, filtering
Selvin, M.D., M.P.H. Syracuse University.
*Winkelstein, Jr.

Associate Professors
Bin Yu, Ph.D. University of California, Berkeley.
Applications of statistics to problems in genetics and molecular biology.

Assistant Professors
Sandrine Dudoit, Ph.D. University of California, Berkeley.
Applications of statistics to problems in genetics and molecular biology.

Assistant Adjunct Professor
Alan E. Hubbard, Ph.D. University of California, Berkeley.
Survival analysis into public health data

Lecturer
Maureen Lahiri, Ph.D. University of Chicago. Applied multivariate methods, time series, longitudinal data

Graduate Advisers: Ms. Dudoit, Mr. Jewell, Mr. Selvin, Mr. Tarter, Mr. van der Laan.

Group Major in Biostatistics

Many issues in the health, medical, and biological sciences are addressed by collecting and exploring relevant data. The development and application of techniques to better understand such data is the fundamental concern of the Group in Biostatistics. The program offers training in theory of statistics and biostatistics, the computer implementation of analytic methods, and opportunities to use this knowledge in areas of medical/health/medical research. The curriculum is taught principally by members of the Department of Statistics (College of Letters and Science) and the Division of Biostatistics (School of Public Health) and provides a wide range of ideas and approaches to the analysis of data.

Graduate Programs and Degrees

The Group in Biostatistics offers two graduate programs: M.A. and Ph.D. These programs are appropriate for students who have either a strong mathematical and statistical background with a focus 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 designation emphasis in computational and genomic biology. For information on this option, go to http://computational-biology.berkeley.edu.

For further information, consult http://www.stat.berkeley.edu/biostat/.

Preparation for Graduate Study

For the M.A., minimum entrance requirements consist of two full-year courses in 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 computing facilities. Research activity of the faculty currently includes bio-statistical 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 us to focus and facilitate 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. This allows 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
http://buddhiststudies.berkeley.edu
Director: Robert Sharf

Professors
*Robert P. Goldman, Ph.D. University of Pennsylvania. (South and Southeast Asian Studies)
Eleanor Roche, Ph.D. Harvard University. (Psychology)
Robert Sharf (D.H. Chen Distinguished Professor of Buddhist Studies) Ph.D. University of Michigan. (East Asian Languages and Cultures)
Alexander von Henss, Ph.D. University of Hamburg. (South and Southeast Asian Studies)
Joanna Williams, Ph.D. Harvard University. (History of Art)
Padminath S. Jairi Ph.D. University of London. (South and Southeast Asian Studies)
Lewis R. 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)

Assistant Professor
Ashley Thompson, Ph.D. Université de Paris. (South and Southeast Asian Studies)

Graduate Adviser: Ms. Berger.

Graduate Program 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 with a Buddhism emphasis 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 interdisciplinary program of study and research 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 East 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 an end in itself. Students are expected to acquire a sophisticated appreciation of the historical, social, and cultural milieus from which the Buddhist textual legacy emerged. All students in the Ph.D. program are encouraged to broaden and deepen their understanding of Buddhist phenomena through incorporating archaeological, ethno-graphic, 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 a relevant field, typically East Asian, South Asian, or Southeast Asian 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 http://buddhiststudies.berkeley.edu.
The Haas School offers curricula leading to the following business administration degrees: Master’s in Financial Engineering, and the Ph.D. degree. The Haas School offers three MBA 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 of management 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 leaders in any type of organization. At the end of the two-year program, students will receive the Berkeley M.B.A. degree, providing a springboard of challenge and opportunity that will become their approach to leadership throughout their professional lives. Students learn to pursue new ideas aggressively, to defy conformity, and to develop creative and innovative solutions to complex business problems.

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 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 2,800 students from more than 200 countries and universities, 40 countries, and a wide range of academic and professional backgrounds.

The Haas School co-sponsors four concurrent-degree programs:

- M.B.A./J.D. with Boalt Hall or Hastings College of the Law;
- M.B.A./M.Phil. in health services management with the School of Public Health;
- 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 a waiver exam may replace more courses with electives. There is also a two-year residency requirement.

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 courses offered at Berkeley. Students may petition to take more than 6 units.

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, HEC Paris, Korea University of Science and Technology, and Columbia Business School in New York City. In addition, the 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.

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<th>Course Code</th>
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<td>UGBA 100</td>
<td>Business Communication</td>
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<td>UGBA 101A</td>
<td>Microeconomic Analysis for Business Decisions</td>
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<td>UGBA 101B</td>
<td>Macroeconomic Analysis for Business Decisions</td>
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<td>UGBA 102A</td>
<td>Introduction to Financial Accounting</td>
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<td>UGBA 102B</td>
<td>Introduction to Managerial Accounting</td>
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<td>Organizational Behavior</td>
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<td>UGBA 106</td>
<td>Marketing</td>
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<td>UGBA 107</td>
<td>Social, Political, and Ethical Environment of Business</td>
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For more information, students should consult the Full-Time M.B.A. program office or apply for fall entry.

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viewing, 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 career-prep providers.

**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 only at 1 p.m. throughout the academic year (September through mid-May, with the exception of school holidays). The sessions last approximately one hour. During a visit, prospective students are invited to visit classes or request a Dutch-treat lunch and school tour with current students. For further information or to arrange for a campus 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 academic backgrounds and professional experience while maintaining their current career momentum.

Students enter the program in the fall semester. They must have completed two prerequisite courses in mathematics and statistics or their equivalents before enrollment. Waiver examination options 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 p.m. to 9:30 p.m. Students attend classes two nights per week. Weekend classes are held Saturday 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 www.haas.berkeley.edu/EWMBA/apply.html. If you are not able to apply online, you may download a printable application on the program’s web site. For further information, please 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; e-mail: haasinfo@berkeley.edu; web site: http://www.haas.berkeley.edu/EWMBA/prospective.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 a broader, integrative investigation of basic and applied theory in the social sciences and in quantitative methods. Fields of primary specialization include accounting, business and public policy, finance, marketing, and organizational behavior and industrial relations. Students in any primary specialization may also choose to concentrate in strategy by taking additional course work. The program also enrolls students with interests in real estate, provided they take the required course work in either accounting or finance. The Ph.D. program includes periods of intensive work in formal courses as well as individually developed and executed reviews of special topics and programs of research. It provides the opportunity to 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 to enable students not only to become critically familiar with the basic technical and theoretical disciplines underlying the practice of business administration, but to develop the capacity to contribute to their extension. 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 developed in an accelerated rate of knowledge acquisition. This change has significantly deepened the sophistication of research in the range of analytical concepts with which the student in business must be 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.

Instruction in the program may be separated into three general periods. The first encompasses formal course work in basic and advanced subjects. The time devoted to these studies, typically two years, depends 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. program mission requirements. 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: http://haas.berkeley.edu/PhD.

### Master’s in Financial Engineering Program

The Master’s in Financial Engineering (M.F.E.) degree offers a full-time one-year graduate degree offered by the Haas School of Business. Students enrolled in the M.F.E. program learn to use theoretical finance, mathematics, and computer programming skills to make pricing, hedging, trading, and portfolio management decisions.

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 the Berkeley UC Berkeley Graduate Division admission requirements, applicants should have solid backgrounds in advanced mathematics and computer programming. Most students admitted to the program have academic and work experience in engineering, finance, statistics, physics, economics, and computer science.

The M.F.E. curriculum consists of 28 units of course work 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 futures markets, corporate finance, dynamic asset management, arbitrage, hedging, futures and options pricing, trading, and dynamic investment strategies. The program 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 commercial and investment banking, insurance, and related fields that focus on corporate strategy, and money management. Specializations include risk management, asset/liability modeling/optimization, security structuring, derivative valuation, and trading. Students who earn the program degree are prepared for success in banks, firms, and in entrepreneurial ventures.

For complete admissions, curriculum, and program information, please visit the Master’s in Financial Engineering Program’s web site at http://www.haas.berkeley.edu/MFE/index.html.

### 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 entities in a market economy; the second concentrates on financial issues, while the third looks at the problems of managing people in organizations. The fourth examines product pricing, marketing, and distribution issues and the fifth examines competition in the international business environment. (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 pass/neutral/pass basis. Formerly Business Administration 24. 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. Seminar Format. Prerequisites: Priority given to freshmen and sophomores. Formerly Business Administration 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-seminar setting. These seminars are offered in all campus departments; topics vary from department to department and from semester to semester. (F,SP)

**39AC. Philanthropy: A Cross-Cultural Perspective.** (3) Three hours of lecture per week. Formerly Business Administration 29AC. This course explores the cultural and ethical values of philanthropy and contrasts the variety of gift giving and sharing traditions that make up American philanthropy. Both the cultural antecedents and their expression in this country will be examined from five ethnic and racial groups: Native American, European American, African American, Hispanic American, and Asian American. The goal is to gain a greater understanding of the many dimensions of philanthropy as it is practiced in the United States today. This course satisfies the American cultures requirement. (F,SP) Van Loo

- **84. Sophomore Seminar.** (1,2) Course may be repeated for credit as topic varies. One hour of seminar per week per unit for fifteen 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. Prerequisite: by 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 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 if restricted per Catalogue. Introduction to Courses and Curricula section of this catalog. Three to twelve hours of group study per week. Must be taken on a passed/not passed basis. Formerly Business Administration 98. Organized group study on topics selected by lower division students under the sponsorship and direction of a member of the Haas School of Business faculty. (F,SP)

Upper Division Courses

100. Business Communication. (2) Three hours of lectures per week. Formerly Business Administration 100. Theory and practice of effective written and oral communication in business practice. Students practice what they learn with oral presentations and written assignments that model real-life business situations. (F,SP)

101A. Microeconomic Analysis for Business Decisions. (3) Students will receive no credit for 101A after taking 101B. Three hours of lecture and one hour of discussion per week. Prerequisites: Economics 1, Mathematics 1A or 16A, Statistics 1, or equivalents. Formerly Business Administration 111. Economic analysis applicable to the problems of business enterprises with emphasis on the marketing of prices and consumer behavior. By integrating 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)

101B. Macroeconomic Analysis for Business Decisions. (3) Students will receive no credit for 101B after taking Economics 108B or 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

102A. Introduction to Financial Accounting. (3) Three hours of lecture and two hours of discussion per week. Formerly Business Administration 120. The identification, measurement, and reporting of financial information. The nature of economic transactions, with a particular emphasis on financial accounting for the use of financial statements. Preparation and interpretation of balance sheets, income statements, and statements of cash flows. (F,SP)

102B. Introduction to Managerial Accounting. (3) Two hours of lecture and two hours of discussion per week. Prerequisites: 102A. Formerly Business Administration 123. The uses of accounting systems and their outputs in the process of management of an enterprise. Understand the principles and practice of financial management, with a particular emphasis on business organization. Preparation and interpretation of balance sheets, income statements, and statements of cash flows. (F,SP)

103. Introduction to Finance. (4) Three hours of lecture and one and one-half hours of discussion per week. Prerequisites: 101A. Formerly Business Administration 130. Analysis and management of the flow of funds through an enterprise. Cash management, source and application of funds, term loans, types and sources of capital. Capital budgeting, capital structure, and financial capital. Introduction to capital markets. (F,SP)

105. Introduction to Organizational Behavior. (3) Students will receive no credit for 105 after taking Psychology 180 or Industrial Engineering and Operations Research 174. Three hours of lecture per week. Formerly Business Administration 150. A general descriptive and analytical study of organizations from the behavioral science point of view. Problems of motivation, leadership, morale, social structure, groups, conflict, and control in complex organizations are addressed. The interaction among technology, environment, and human behavior are considered. Alternate theoretical models are discussed. (F,SP)

106. Marketing. (3) Three hours of lecture per week. Formerly Business Administration 161. Analysis of marketing and business strategy in the context of market and market structure; marketing cost and efficiency; public and private regulation; the development of marketing programs including decisions involving products, price, promotional distribution. (F,SP)

107. The Social, Political, and Ethical Environment of Business. (3) Three hours of lecture or two 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)

112. Economics of Regulated Industries. (3) Three hours of lecture per week. Prerequisites: 101A or equivalent. Formerly Business Administration 112. Surveys of industries, with emphasis on the factors responsible for regulatory policies and alternatives to economic regulation, including market competition and public ownership. (F,SP)

113. Managerial Economics. (3) Three hours of lecture per week. Prerequisites: 101A-101B or equivalents. Formerly Business Administration 113. Analysis of the theory 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)

114. 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 various aspects of business. (F,SP) Staff

117. 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)

118. International Trade. (3) Three hours of lecture per week. Prerequisites: 101A or equivalent. Formerly Business Administration 187. This course will develop models for understanding the economic causes and effects of international trade, will investigate the effects of economic policies that inhibit trade, and will examine the political economy of trade. By integrating the findings of economic and empirical research in international economics, this course will help 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

119. Strategic Planning. (3) Three hours of lecture per week. Prerequisites: 101A-101B, 102A-102B, 103, 105, and senior standing. Formerly Business Administration 190. Class format consists of lecture, student presentations, and case discussion. This course will cover the main topics of strategic management. Students will be required to design and implement business strategies for private, public, and/or not-for-profit organizations. Students will team with a client organization and present their strategic recommendations. (F,SP)

120A. Intermediate Financial 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 capital and long-term liabilities, investment in securities, intangible assets. (F,SP)

120B. Advanced Financial Accounting. (4) Three hours of lecture and two hours of discussion per week. Prerequisites: 120A. Formerly Business Administration 122. Continuation of 120A. Sources of long-term capital; fundamentals of financial analysis, accounting for partnerships, consolidated financial statements, adjustments of accounting data using price indexes; accounting for the economic effects of pension plans; other advanced accounting problems. (F,SP)

121. Federal Income Tax Accounting. (4) Three hours of lecture and one and one-half hours of discussion per week. Prerequisites: 120A (120B recommended). Formerly Business Administration 128A. Determination of individual and corporation tax liability; influence of federal taxation on economic activity; tax considerations in business and investment decisions. (F,SP)

122. Financial Information Analysis. (3) Three hours of lecture per week. Prerequisites: 120A. This course is designed to develop business information analysis; 1) develop procedures for financial statement analysis; 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 bankruptcy analysis; 3) help students appreciate the factors that influence the outcome of the financial reporting process, such as the incentives of reporting parties, regulators, investors. (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, including ethical, legal and professional 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: 102A-102B. 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 profit evaluation, capital structure, and regulation of financial information, including ethical, legal and other professional issues, historical developments, and current concerns. (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 investment capital, operations of security markets, determination of investment policy, and procedures for analysis of securities. (F,SP)

137. Special Topics in Finance. (1-4) Course may be repeated for credit. One to four hours of lecture per week. Prerequisites: 103. Formerly Business Administration 139. A variety of topics in finance with emphasis on current problems and research. (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, dynamic programming, inventory control, queuing theory, and simulation. (F,SP)

141. Production and Operations Management. (3) Three hours of lecture per week. Prerequisites: 140 or equivalent. Formerly Business Administration 142. A survey of the concepts and methodologies for management of production and operations systems. Topics include inventory control, material requirements planning for multistage production systems, aggregate planning, scheduling, and production distribution. (F,SP)

144. Fundamentals of E-Business. (4) Three hours of lecture/work and one hour of discussion per week. Prerequisites: Computer Science 3 or equivalent. Formerly Business Administration 147. A survey course concerned with the importance of computers in organizations, including small groups, universities, firms, government, and society at large. Topics include history of development of computers, characterization 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. (4) Three hours of lecture and one and one-half hours of discussion per week. Prerequisites: Computer Science 3 or equivalent. Formerly Business Administration 148. Study of principles and procedures of management information systems (MIS) planning, design, and implementation. Emphasis on organizations. Together with successful and efficient implementation strategies of business systems. "Real-world" projects encompassing all phases of systems analysis, feasibility study, systems design, development, prototyping, testing, documentation, and evaluation. Both technical and managerial issues will be emphasized. (F,SP)

147. Special Topics in Manufacturing 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 149. A variety of topics in manufacturing and information technology with emphasis on current problems and research. (F,SP)

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 selection, placement, training, personnel, and termination policies with career ladders within a changing organization. Role of the staff member. Introduction of change. Implications of behavioral research for management policies and practices. (F,SP)

152. Negotiation and Conflict Resolution. (3) Three hours of lecture per week. Prerequisites: 105. 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 negotiators and decision makers engaged 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 skills experimentally in various 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. A -level, white collar, and professional employee relations. Background and functioning of employer and employee organizations. Functioning of labor markets and wage and income security issues from the perspectives of public policy in 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. (F,SP)

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 157. 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 purchase decisions. It is critical to understand how consumers think and behave, which is critical for a company wishing to develop a customer-driven differentiation strategy. Consumer psychology is the systematic study of how consumers perceive information, how they encode it in memory, integrate it with other sources of information, 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 diverse applications. (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, 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. Information technology has altered and perhaps increased the 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 will focus on teaching students how to use customer information to better market to consumers. In addition, the course addresses how information technology affects marketing strategy. (F,SP) Staff

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 utilizing advertising and measuring its effect. (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; assortments of goods; 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 167. A variety of topics in marketing with emphasis on current problems and research. (F,SP) Staff

172. 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 discussions of the evolution of the large corporation, the development of modern managerial techniques, and the changing relationship of business, government, and labor. Also listed as American Studies C172. (F,SP) Rosen

175. Legal Aspects of Management. (3) Three hours of lecture per week. Formerly Business Administration 175. Analytical an 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 association, and the impact of law on economic enterprise. (F,SP)

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 177. A variety of topics in business and public policy with emphasis on current problems and research. (F,SP)

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 188. 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 multinational enterprises; management problems of development potential of international operations. (F,SP)

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,SP)

181. Valuation of Real Property. (3) Three hours of lecture per week. Prerequisites: 180 or equivalent. Formerly Business Administration 181. An 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 investment. (F,SP)

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 criteria; public, real estate finance and urban development. (F,SP)

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, titles, development rights, and the regulation thereof in the public interest. (F,SP)

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,SP) 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 analysis of the public and not-for-profit sectors. Institutional arrangements as they impinge on operations in the public sector. Emphasis on managerial approaches and tools to use in a non-profit environment. (F,SP)

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 lectures, guest speakers, and 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 dilemmas one can face in business in trying to do both “good for society” and “well for shareholders.” It looks at the concept of corporate responsibility and how this supports core business objectives, core competencies, and bottom-line profits. (F,SP) 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,SP)
about the risk characteristics of different asset classes. MBA course in investments. Students learn how to

... per week for seven weeks. This course provides a broad overview of issues facing manufacturing and service companies. Major topics include process analysis, quality management, supply chain management, service systems management, and operations strategy. These issues are explored through lectures, case studies, and videos pertaining to a variety of industries, from fast food to fashion goods to automobile manufacturing to telephone call centers. (F,SP) Staff

205. Organizational Behavior. (2) Four hours of lecture per week for seven weeks. How can you motivate employees to go above and beyond the call of duty to get the job done? How can you be sure that your decisions are not biased? What influence tactics can you use when you do not have the formal authority to tell someone what to do? This course adds to your understanding of life in complex organizations by covering topics spanning the micro (individual level of analysis), the macro (organizational level of analysis), and also topics that integrate these two levels. (F,SP) Staff

206. Marketing Management. (2) Four hours of lecture per week for seven weeks. This course is designed for students who need to understand the basic concepts and techniques of marketing strategy as a foundation for more advanced study in the area. The approach is to use marketing frameworks and strategic analysis to provide a framework for the decisions associated with the management of the marketing function in the modern organization focusing on customer analysis, competitive analysis and the analysis of marketing investments. (F,SP) Staff

207. Ethics and Responsibility in Business. (1) Two hours of lecture per week for seven weeks. Former Business Administration 207A. This course provides students with the ability to anticipate, critically analyze, and appropriately respond to the social, ethical, and political challenges that face managers operating in a global economy. (F,SP) Staff

212. Managerial Decisions in Regulated Industries. (3) Three hours of lecture per week. Prerequisites: Business Administration 210A or equivalent. Formerly Business Administration 212. Introduction to administrative law and the regulatory process. Economic principles of administrative regulation of pricing, investment, entry-exit behavior and other market parameters; theoretical and empirical problems in regulated industries, including transportation, telecommunications, energy, and financial sectors, with emphasis on emerging competition in these industries. Analysis of potential regulatory reforms with alternatives to regulation. (F,SP) Staff

214. Forecasting Methods for Business. (3) Three hours of lecture per week. Prerequisites: Business Administration 200, 201A-201B, 204 or equivalents. Formerly Business Administration 214. The course will focus on current methodologies for forecasting techniques. These include econometric techniques and purely extrapolative (time series) methods, as well as combinations of more than one procedure. The emphasis is on data availability, and students will learn a “forecasting process” which can be applied to all types of forecasting problems. To facilitate the “learning by doing” aspect of the course, several computer-oriented problem sets and a strategic project are required. (F,SP) Staff

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 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 218A. 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 for managers of multinational corporations. Topics include: foreign exchange 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. (F,SP)

218B. Theory and Institutions of International Trade. (3) Three hours of lecture per week. Prerequisites: Business Administration 218A. Formerly Business Administration 287. The course focuses on determinants of global trade flows, patterns of international competition, and government policies affecting international trade. Topics include: tariff and nontariff barriers to trade, industrial policies in declining and emerging industries, strategic trade policy, United States trade law, bilateral agreements and approaches to trade liberalization, and current issues in international trade policy. (F,SP)

222. Financial Information Analysis. (3) Three hours of lecture per week. Prerequisites: Business Administration 202A or equivalent. Formerly Business Administration 222. Issues of accounting information evaluation with special emphasis on the use of financial statements by decision makers external to the firm. The implications of recent research in finance and accounting for external report users will be explored. Emphasis will be placed on models that describe the user’s decision context. (F,SP)

223. Corporate Financial Reporting. (3) Three hours of lecture and one hour of discussion per week. Prerequisites: Business Administration 202A and 231. This course emphasizes 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 major stages of management: 1) financial planning and decision making; 2) information received during operations (cost accounting); and 3) information for control and performance evaluation. (SP)

224A. Managerial Accounting. (3) Three hours of lecture and one hour of optional discussion per week for 10 weeks. Prerequisites: Business Administration 202A or equivalent. Formerly Business Administration 241. This course utilizes 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 major stages of management: 1) financial planning and decision making; 2) information received during operations (cost accounting); and 3) information for control and performance evaluation. (SP)

224B. Advanced Managerial Accounting. (2,3) Forty hours of work per unit per term. Prerequisites: Business Administration 241A or equivalents. Formerly Business Administration 224. This course includes the theory of management accounting, its application in modern organizations, and related problem areas included in recent CPA and CMA examinations. (F,SP)

225. Management Planning and Control Systems. (3) Three hours of lecture per week. Prerequisites: Business Administration 202A-202B. Formerly Business Administration 225. Planning and control systems are an essential tool in the management of modern organizations. Strategic planning and management control are studied through the use of cases illustrative of management practice in both public and private organizations. (SP)

227B. Topics in Taxation. (3) Course may be repeated for credit. Three hours of lecture per week. Formerly Business Administration 227B. This course will cover topics in personal or corporate taxation or both. Topics will vary from semester to semester. (F,SP)

231. Corporate Finance. (3) Three hours of lecture and one hour of optional discussion per week. Prerequisites: Business Administration 203. Formerly Business Administration 231. This course will study the
principles underlying alternative financial arrangements and contracts and their application to corporate financial management. In particular, it will examine the impact of incentive, moral hazard, and principal-agent problems, that arise as a consequence of asymmetric information, government intervention, managerial incentives and taxes, on financial decisions regarding capital budgeting, dividend policy, capital structure and mergers. (F,SP)

232. Financial Institutions and Markets. (3) Three hours of lecture and one hour of optional discussion per week. Prerequisites: Business Administration 200 and 204 or equivalents. 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 debt contracts and securities and on innovations in the bond and money markets. 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)

233. Investments. (3) Three hours of lecture and one hour of optional discussion per week. Prerequisites: Business Administration 203. 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 evolution of asset valuation models, and strategies that can be employed to achieve various investment goals. (F,SP)

234. Advanced Topics in Corporate Finance. (2) Course may be repeated for credit. Two hours of lecture per week. Prerequisites: Business Administration 231 and 232. This course will cover advanced topics in financial management, and the theory of valuation of securities and their applications. (F,SP)

235. Advanced Topics in Financial Institutions and Financial Markets. (3) Course may be repeated for credit. Three hours of lecture per week. Prerequisites: Business Administration 231 and 232. Formerly Business Administration 235. Normative issues in financial institutions, regulation of financial institutions, the analysis of moral hazard in financial markets, and empirical studies on financial institutions and financial markets. Topics to be covered will vary. (F,SP) Staff

236A. Futures and Option Markets. (2) Course may be repeated for credit. Two hours of lecture per week. Prerequisites: Business Administration 203 plus one additional graduate finance course. Formerly Business Administration 236. Staff

236B. Investment Strategies and Styles. (2) Course may be repeated for credit. Two hours of lecture per week. Prerequisites: Business Administration 203 and 204. Formerly Business Administration 239. Introduction to alternative investment strategies and styles as practiced by leading money managers. A money manager will spend approximately one-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 research the company’s resources, its capital structure, and their ingenuity to address a set of questions relating to the firm’s investment value. (F,SP) Staff

237. Topics in Finance. (5-3) Course may be repeated for credit. One-half to three hours of lecture per week. Prerequisites: Business Administration 203 and 204. Formerly Business Administration 237. This course will cover advanced topics in financial management, and the theory of valuation of securities and their applications. (F,SP)

240. Introduction to Management Science. (3) Three hours of lecture per week. Prerequisites: Business Administration 200 and 204 or equivalents. Formerly Business Administration 240. Introductory course to discuss applications of management science models to business management and public policy problems. Topics include linear programming, transportation, assignment, queuing and inventory management, queuing theory and 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. Strategic issues involved in the productivity, logistics of a firm and models of those functions that are useful for the firm’s strategic planning. Topics include models of a firm’s capacity expansion, facility location and management of learning and technology curve strategies; and industry cost models. (F,SP)

243. Decisions, Games, and Strategies. (3) Three hours of lecture per week. Prerequisites: Business Administration 200, 204 or equivalent. Formerly Business Administration 243. The course considers two techniques for generating strategies: game theory, which attempts to model the decisions and actions of several important topics in business data processing and management. The course will cover an introduction to database management systems, current research on these issues, and the role of databases in the development of management systems. Topics include the architecture of database management systems, the role of databases in decision making, and the use of databases in developing management information systems. (F,SP)

244A. MIS and Data Management. (3) Three hours of lecture and one-and-one-half hours of discussion per week. Prerequisites: Business Administration 240. Formerly Business Administration 248A. This course covers the major focus is to provide future general managers and information systems specialists with the knowledge and skills necessary for the development and management of business information systems. The course includes topics covering the design and development of business information systems, the role of computers in business, and the role of the MIS specialist in the organization. (F,SP)

244B. MIS: Systems Analysis and Design. (3) Three hours of lecture per week. Prerequisites: Business Administration 240. Formerly Business Administration 248B. The goal of this course is to provide future general managers and information systems specialists with the knowledge and skills necessary for the development and management of business information systems. The course includes topics covering the design and development of business information systems, the role of computers in business, and the role of the MIS specialist in the organization. (F,SP)

244C. MIS: Managerial and Organizational Issues. (2) Two hours of lecture per week. Prerequisites: Business Administration 240. Formerly Business Administration 248C. This course covers the role of information systems in organizations, systems analysis, trade-offs and economic consideration in systems development, hardware selection and review of technological advancements relevant to modern organizations. (F,SP)

244D. Telecommunications. (3) Three hours of lecture per week. Prerequisites: Business Administration 240. Formerly Business Administration 248D. This course is intended for students who wish to gain better understanding of one of the most important issues facing management today—designing, implementing, and managing telecommunications networks and the use of telecommunications in organizations. The course focuses on issues such as the use of telecommunications and the Internet in organizations, and the role of telecommunications in strategic planning and decision-making. (F,SP)

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. The course 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.
Business Administration 261. This course develops the skills necessary to plan and implement an effective marketing research study. Topics include research design, psychological measurement, survey methods, experimentation, statistical analysis of marketing data, and effective reporting of technical material to management. Students select a client and prepare a market research study during the course. Course intended for students with substantive interests in marketing. (F,S,P) 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. The focus of this course is on developing a framework to formulate complete marketing programs including product, price, distribution and promotion policies. There is a heavy use of case analysis. Course is primarily designed for those who will take a limited number of advanced marketing courses and wish an integrated approach. (F,S,P) Staff

263. Information and Technology-Based Market. (3) Three hours of lecture per week. Prerequisites: Business Administration 206. Formerly Business Administration 262B. 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 manipulate all of such information. This course addresses this shortcoming by teaching students how to use customer information to better market to consumers. In addition, the course addresses how information technology affects marketing strategy. (F,S,P)

264. High Technology Marketing Management. (3) Three hours of lecture per week. Prerequisites: Business Administration 206 or equivalent. Formerly Business Administration 264. 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 focus of this course is to explore these differences. (SP)

265. Integrated Marketing Communications. (2) Two hours of lecture per week. Prerequisites: Business Administration 202B or equivalent; 260 is recommended. Formerly Business Administration 265. A specialized course in advertising, focusing on management and decision-making. Topics include objective-setting, copy decisions, media decisions, budgeting, and strategy formulation. 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) Two hours of lecture per week. Prerequisites: Business Administration 202B, 206, or equivalent. Formerly Business Administration 266. 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 roles and social forces which govern the channel evolution. It is completed through the examination of tools to select, manage and motivate channel partners. (F,S,P)

267. Topics in Marketing. (5-3) Course may be repeated for credit. One-half to three hours of lecture per week. Addition to field of business, topics will vary from year to year and will be announced at the beginning of each semester. (F,S,P)

268A. Global Marketing Strategy. (2) Two hours of lecture per week. Prerequisites: Business Administration 206 or equivalent. Formerly Business Administration 268A. This course covers a wide variety of topics relating to the management of international marketing strategy, including frameworks for developing international marketing strategy; sources and sustainability of competitive advantage; international market structure analysis; market entry strategy; and integration of marketing strategy with other functional strategies. (F,S,P)

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 a mixed economy, business-government relations, the regulation of business, corporate political activity and corporate governance, compares United States corporate governance systems, public policy, and political systems to those of Western Europe and Japan. (F,S,P)

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 used in the development of strategies by which business establishes and sustains its competitive advantage and influences the political system and public policies. Special emphasis is placed on understanding the complex 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. (F) Quigley

277. Special Topics in Business and Public Policy. (1-3) One to three hours of lecture per week. Prerequisites: Consent of instructor. Formerly Business Administration 277. Topics vary by semester at discretion of instructor and by student demand. Topics areas include: budget allocation and regional distribution of corporate social responsibility in the mixed economy; managing the external affairs of the corporation, including community, government, media and stakeholder relations; technology policy, research and development and the effects of government regulation of business on technological innovation and adoption. (F,S,P)

278A-278B. Comparative and International Business and Public Policy. (2-3;2-3) Three or more hours of lecture per week. Prerequisites: Business Administration 207 or equivalent, or consent of instructor. Formerly Business Administration 278A-278B. This course examines and compare business-government relations, the public policy process, the business enterprise systems and public policies toward business in Europe (272A) and the Pacific Rim (272B). Courses also explore the relations between the United States and Europe, or Pacific Rim nations, respectively. (F,S,P)

279. Real Estate and Urban Land Economics. (3) Three hours of lecture and one hour of optional discussion per week. Prerequisites: Consent of instructor. Formerly Business Administration 279. In-depth review of the history of land use, urban form and real estate; economic theory and practice; property rights, valuation, and zoning. (SP)

280. Real Estate and Urban Land Economics. (3) Three hours of lecture and one hour of optional discussion per week. Prerequisites: Consent of instructor. Formerly Business Administration 280. In-depth review of the history of land use, urban form and real estate; economic theory and practice; property rights, valuation, and zoning. (SP)

287. Special Topics in Real Estate Economics and Finance. (1-3) Course may be repeated for credit. One to three hours of lecture per week. Prerequisites: Business Administration 280 and consent of instructor. Formerly Business Administration 287. Topics vary each semester. Topic areas include economic fundamentals of private and public finance—will be explored. (F,S,P)

290A. Introduction to Management Technology. (3) Three hours of lecture per week. Formerly Business Administration 290E. This course gives students an overview of the main topics encompassed by management 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? The course introduces students to Haas and College of Engineering faculty working in the relevant areas and student projects at leading high tech firms. (F,S,P) Staff

290C. Strategic Computing and Communications Technology. (3) Three hours of lecture per week. Prerequisites: Graduate standing in engineering, business administration, information management and systems, or consent of instructor. Formerly Business Administration 290C. Factors strongly influencing the design of new computing and communications products and services (based on underlying technologies such as electronics and software) in commercial applications. Technology trends and limits, intellectual property, government policy, and industrial organization. Strategies to manage the design and marketing of successful products and services. (SP) Messerschmitt, Varian

290D. Design as Strategic Management Issue. (2) Two hours of lecture per week. Prerequisites: Graduate standing in engineering, business administration, information management and systems, or consent of instructor. Formerly Business Administration 290D. This course is a study of product design, facilities design, corporate identity, etc. How do these design strategies are integral to product development and influence customer satisfaction, quality issues, manufacturing procedures, and marketing tactics. (F,S,P)

290E. Marketing for High-Tech Entrepreneurs. (3) Three hours of lecture per week. Every successful entrepreneurial high tech venture has at its core individual or with mastery of two skill sets: marketing and management expertise, and technological skill. This course is intended to provide the foundation needed for the management of an entrepreneurial high technology venture, regardless of whether the individual’s “home” skill set is technical or managerial. We will focus on the unique challenges facing entrepreneurial companies as a function of markets and technologies. Emphasis is placed on the special requirements for creating and executing marketing plans and programs in a setting of rapid technological
change and limited resources. This course is particularly suited for those who anticipate founding or operating technology companies. (F,SP) Staff

290G. International Trade and Competition in High Technology. (2) Two hours of lecture per week. Prerequisites: Graduate standing. Formerly Business Administration 290G. This course looks at who is winning or losing and why in international competition in high technology industries. It will emphasize the interaction between business strategies and the economic and political forces that shape development and diffusion of new technologies. (F,SP)

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 diverse elements of the innovation process and how they are managed; discusses the uneasy relationship between technology and the workforce; and examines challenges of managing innovation globally. (F,SP)

290M. High-Tech Product Design and Rapid Manufacturing. (3) Three hours of lecture per week. Prerequisites: Graduate standing. Formerly Business Administration 290M. This course will study CAD/CAM, rapid prototyping, metal products, semiconductors, electronic packaging, biotechnology, and robotics technologies and includes a hands-on laboratory using CAD and manufacturing techniques. Economic and sociotechnical structures, product cycle time, and future trends are also covered. (F,SP) Staff

290N. Managing the New Product Development Process. (3) Three hours of lecture per week. Prerequisites: Graduate standing. Formerly Business Administration 290N. An operationally focused course that aims to develop the interdisciplinary skills required for successful product development. Through readings, case studies, guest speakers, applied projects, and student research, students discover the basic tools, methods, and information structures needed for new product development management. Course covers process phases: idea generation, product definition, product development, testing and refinement, manufacturing ramp-up and product launch. (F,SP)

290O. Opportunity Recognition: Technology and Entrepreneurship in Silicon Valley. (3) Three hours of lecture per week. This course is intended to provide the core skills needed for the identification of opportunities that can lead to successful, entrepreneurial high technology ventures, regardless of the individual’s “home” set, whether technical or managerial. We examine in depth the approaches most likely to succeed for entrepreneurial companies as a function of markets and technologies. Emphasis is placed on the skills needed for creating and executing an opportunity strategy in a setting of rapid technological change and limited resources. This course is particularly suited for those who anticipate founding or operating technology companies. (F,SP) Staff

290P. Project Management Case Studies. (2) Two hours of lecture per week. Prerequisites: Graduate standing. Formerly Business Administration 290P. This course presents case studies of projects that required intervention to avert catastrophic failure. Students will discuss and review real management problems of major corporations. They will create strategic plans to alleviate problems and learn how to manage a large project to a successful completion. (F,SP)

290Q. Quality Improvement: Strategy, Processes, and Customers. (3) Three hours of lecture per week. Formerly Business Administration 290Q. This course is intended to provide a strong introduction to students on contemporary issues concerning product and service quality. This course, which began in 1992, has moved rapidly to the foreground as a major arena for competitive struggles, and firms that fail to recognize its importance and develop effective organizational response will fail by the wayside. (F,SP)

290T. Topics in Management of Technology. (5-3) Course may be repeated for credit. One-half to three hours of lecture per week. Advanced study in the field of Management of Technology. Topics will vary from year to year and will be announced at the beginning of each semester. (F,SP)

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 inspiring commitment in their constituencies rather than merely demanding compliance. 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 them. Participants will develop confidence in both the content of their message and their ability to convey it. (F,SP)

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 will provide the student with specialized knowledge in some area of managerial communications. Topics include multimedia business presentations, personal leadership development, diversity management, and making meetings work. Topics will vary from semester to semester. (F,SP)

292A. Management in the Public and Not-for-Profit Sectors. (2.3) Forty-five hours of work per unit term. Prerequisites: Business Administration 210A and 210B or equivalents. Formerly Business Administration 215. Planning-programming-budgeting systems and benefit-cost analysis for resource allocation and planning in the public sector. Use of pricing in public enterprise. Efficiency when pricing criteria are absent. Applications in natural resources, medical services, transportation, and education. (F,SP)

292M. Topics in Nonprofit and Public Management. (1-3) Course may be repeated for credit. One to three hours of lecture per week. Advanced study in the field of nonprofit management. Topics will vary from year to year and will be announced at the beginning of each semester. (F,SP) Staff

292P. Strategic CSR and Consulting Projects. (3) Three hours of lecture per week. Discuss the field of 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 the right thing and also be successful. It looks at CSR from a corp. strategy perspective, and how the supports corporate business objectives, core competencies, and bottom line profits. (F,SP) Staff

292S. Introduction to Social Entrepreneurship. (2) Two hours of lecture per week. The course will (1) introduce students to some general theories of social entrepreneurship, through a review of case analyses, guests, and a project, (2) introduce the emerging capital market for social ventures and the possible trade-offs in social and financial return expectations, (3) review the ways in which students can identify and work with early-stage firms to foundations, (4) 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,SP) 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,SP)

293. Individually Supervised Study for Graduate Students. (1-5) Course may be repeated for credit. Prerequisites: Graduate standing. Formerly Business Administration 293. This is an independent study type of course for students not available to the student in the regular curriculum. Supervised study of subjects not available to the student in the regular schedule, approved by faculty advisor as appropriate for the student’s program. (F,SP) Staff

294. Selected Topics for MBA Students. (1) Course may be repeated for a maximum of 2 units. Two hours of seminar per week. Sections 1-10 to be graded on a letter-grade basis. Sections 11-15 to be graded on a satisfactory/unsatisfactory basis. Prerequisites: MBA students. Formerly Business Administration 294. The course focuses on a specific industry, field of management, or region of the world and is initiated and organized by students. It is usually a survey course. Topics will vary from year to year and will be announced at the beginning of each semester. (F,SP)

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 business plan. Students are organized in teams of four or more and develop a new enterprise idea of their own choosing. Students conduct research with members of the business community, perform analysis, and write a formal business plan. They then present an appeal for funding to a panel consisting of the instructors and members of the investing community. (F,SP) Staff

295B. Venture Capital and Private Equity. (3) Three hours of lecture per week. Prerequisites: Business Administration 295A and 234 recommended. This is an advanced case-based course intended to provide the background, tools, and themes of the venture capital industry. The course is organized in 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 companies they invest in, (3) operating investor—examines how they are formed and managed, and (4) new frontiers—reviews many of the key ideas developed in the course. (F,SP) Staff

295D. New Venture Finance. (2) Three hours of lecture per week. Formerly Business Administration 295D. This is a course about financing new entrepreneurial ventures, emphasizing those 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 venture capital process, including how they are formed and managed, accessing the public markets, mergers, and strategic alliances. (SP) Staff

295T. Special Topics in Entrepreneurship. (1-3) One to three hours of lecture per week. Sections 1-10 to be graded on a letter-grade basis. Sections 11-15 to be graded on a satisfactory/unsatisfactory basis. Prerequisites: All core courses or equivalents. Formerly Business Administration 295C. Sections of this course will cover issues in entrepreneurship that either appeal to specific students (e.g., new ventures in computer software) or in the aspects of the entrepreneurial process being considered (e.g., new venture funding). The courses typically will be offered during the fall or spring and are designed to be offered by the University and the locale to knowledgeable and experienced members of the business community. (SP) Staff

296. Special Topics in Business Administration. (5-3) Course may be repeated for a maximum of one-half to three hours of lecture per week. Sections 7A and 10A (fall) and 7B and 10B (spring) will be offered in Progress. Credit and grade to be awarded on completion of sequence. All courses to be offered or graded 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,SP) Staff

298A-298B. International Business Development for MBAs. (2.1) Two hours of lecture per week extending for three weeks following the spring semester. Credit and grade to be awarded on completion of sequence. All courses to be offered or graded on a letter-grade basis. Prerequisites: MBA core courses. Formerly Business Administration 298A-298B. This course explores the issues of conducting business in an international context, including an analysis of project management, decision making, cross-cultural interactions, and cultural differences. The three-week project, typically in a developing economy, provides a real-life application of theories of this course and of the first-year MBA courses. The fall segment highlights the pre-
sentations of each returning team on their project findings and experiences. (SP)

299. Strategic Planning in the Global Context. (2) Four hours of lecture per week for seven weeks. Prerequisites: 201A, 202, 203, 205, and 206, or consent of instructor. Course covers core topics in strategy, including: selection of strategies, the choice of products and services to offer; competitive positioning in product markets; decisions about scope and diversity; and the design of organizational structure, administrative systems, and other issues of control and internal regulation. (F,SP) Staff

299B. Global Strategy and Multinational Enterprise. (3) Three hours of lecture per week. Prerequisites: All core courses. Formerly Business Administration 299E. Identifies the management challenges facing international firms. It systematizes and assesses the structural, administrative, and governmental issues and principles governing the design and operation of multinational enterprises. The course builds on principles of multipolar systems and governmental regulations that may affect the firm's operations. Three and one-half hours of lecture per week. Advanced study in the field of business administration. Formerly Business Administration E299F. (F,SP)

299E. Competitive and Corporate Strategy. (3) Three hours of lecture per week. Prerequisites: All core courses. Formerly Business Administration 299E. Examine optimal production and pricing policies for firms in competitive environments; optimal strategies through time; strategies in the presence of imperfect information. How do managers, organizations, and government policies (including taxation) affect output and price decisions. Social welfare implications of decisions by competitive firms also explored. (F,SP)

299H. Strategic Planning and the Organization of Health Services. (3) Three hours of lecture per week. Prerequisites: All core courses. Formerly Business Administration 299H. This course examines major issues in the health services industry, including marketing and management of health service organizations, strategic planning and policy formulation, and organizational structure, administrative systems, and other issues of control and internal regulation. Formerly Business Administration 299G. (F,SP)

299M. Introduction to Finance. (2) Three hours of lecture per week. Prerequisites: All core courses. Formerly Business Administration 299M. The course introduces students to the institutions and operations of the international macroeconomic environment; special attention is paid to international financial arrangements relevant for managers of multinational corporations. Topics covered include exchange rates, exchange rate determination; history of the international financial system; arbitrage strategies; the international aspects of financial decisions. Three hours of lecture per week. Formerly Business Administration E299M. (F,SP)

299N. Organizing for Strategic Advantage. (3) Three hours of lecture per week. Prerequisites: All core courses. Formerly Business Administration 299N. Course examines current models of strategy, structure, process interaction, and their historical foundations. Students will apply current theory to traditional cases and to current examples of organizational adaptation in the business press. In addition, the course will examine in detail emerging patterns of strategy, structure, and process interaction and their historical foundations. Three hours of lecture per week. Formerly Business Administration 299Q. (FSP)

299T. Strategic Planning: Perspectives and Decisions. (3) Three hours of lecture per week. Prerequisites: All core courses. Formerly Business Administration 299T. Concept 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)

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. GSIs are an integral part of the instructional process. Students will apply the principles of pedagogical support. This course seeks to prepare MBA students for their first GSI position by providing them with the management, technical, and interpersonal skills that are necessary to be an effective GSI. The course will also introduce MBA students to the role of program assistants, which is similar to that of graduate student assistants in other professional schools. Students may receive credits for this course. (F,SP) Staff

Evening & Weekend Master’s in Business Administration

Graduate Courses

200C. Leadership Communications. (1) Three hours of lecture for five weeks. Leadership communication is a workshop in the fundamentals of public speaking in today's business environment. Through prepared and impromptu speeches, expert instruction, peer coaching, and lectures, students will sharpen their authentic and persuasive communication skills, develop critical listening skills, improve ability to give, receive, and apply feedback, and gain confidence as public speakers. (F,SP) Staff

201A. Economic Analysis for Business Decisions I. (2) Three hours of lecture per week for ten weeks. Prerequisites: E204. Formerly Business Administration 201A. This course uses the tools of microeconomics to analyze decision problems. Both the issues and the evidence in connection with these problems will be examined. Three and one-half hours of lecture per week. Formerly Business Administration E291A. (F,SP)

201B. Quantitative and Economic Analysis for Business Decisions II. (2) Three hours of lecture per week for ten weeks. Prerequisites: Business Administration E201A. Formerly Business Administration E201B. This course builds on the foundations developed in 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 examined. Other topics covered in the course range from the specific U.S. balance of payments situation to the broader problems associated with economic growth and decay in the world. Three hours of lecture per week. Formerly Business Administration E291B. (SP)

202. Financial Reporting. (2) Three hours of lecture for ten weeks. Formerly Business Administration E202A. Published financial reports provide the most important single set of data on modern organizations. This course is designed to provide a working knowledge of accounting measurements which are necessary for a clear understanding of published financial reports. Three hours of lecture per week. Formerly Business Administration E202. (SP)

203. Introduction to Finance. (2) Three hours of lecture for ten weeks. Formerly Business Administration E203. This course will examine the wide menu of available assets, the institutional structure of U.S. and international financial markets, and the market mechanisms for transferring and pricing those assets. Topics include discounting, capital budgeting, behavioral history of asset returns, and diversification and portfolio theory. Course will also provide introductions to asset pricing theory for primary and derivative securities and to the principles governing corporate financial arrangements and contracting. (F,SP) Staff

204. Qualitative Analysis for Business Decisions. (2) Six hours of lecture per week for five weeks. Prerequisites: Admission to the program. Formerly Business Administration E204. 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. Three hours of lecture per week. Formerly Business Administration E205. (SP)

205. Organizational Behavior. (2) Three hours of lecture per week for ten weeks. Prerequisites: Admission to the program. Formerly Business Administration E206. This course addresses behavior in and of organizations. Covered will be issues of individual behavior, group functioning, and the actions and decisions of organizations in their environments. Problems of work motivation, task design, leadership, communication, organizational design, and innovation will be addressed using multiple theoretical perspectives. Applications for the management of organizations will be illustrated through examples, cases, and exercises. Three hours of lecture per week. Formerly Business Administration E290. (SP)

206. Marketing Organization and Management. (2) Three and one-half hours of lecture per week for eight weeks. Prerequisites: Business Administration E200. Formerly Business Administration E206. Topics include an overview of the marketing system and the marketing concept, consumer behavior, market research, segmentation and marketing decision making, marketing structures, and evaluation of marketing performance in the economy and society. Three and one-half hours of lecture per week. Formerly Business Administration E296. (SP)

207. Ethics and Responsibility in Business. (1) Three hours of lecture per week for five weeks. Prerequisites: Admission to the program. Formerly Business Administration E207. A study of basic ideas, concepts, rules, and principles that characterize the legal, political, and social framework within which the system operates. Three hours of lecture per week. Formerly Business Administration E298. Three and one-half hours of lecture per week. Formerly Business Administration E298. (F,SP) Staff

212. Managerial Decisions in Regulated Industries. (3) Three hours of lecture per week. Prerequisites: Business Administration E201A or equivalent. Formerly Business Administration E212. Survey of the rationales 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, 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. Three hours of lecture per week. Formerly Business Administration E212. (SP)

214. Forecasting Methods for Business. (3) Three hours of lecture per week. Prerequisites: Business Administration E201B. Formerly Business Administration E214. This course will focus on a variety of currently used forecasting techniques. These include econometric techniques and purely explorative (time series) methods, as well as combinations of more than one technique. The emphasis of the course will be on students learning the “forecasting process” which can be applied to all types of forecasting problems. To facilitate the “learning by doing” aspect of the course, several computer-oriented problem sets and a forecasting project are required.

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 201B. Formerly Business Administration E218A. Formerly Business Administration E298. This course will examine the role of capital flows and the global financial system in international economic growth and development. Three hours of lecture per week. Formerly Business Administration E298. (F,SP) Staff

218B. Theory and Institutions of International Trade. (3) Three hours of lecture per week. Prerequisites: Business Administration E201A. Formerly Business Administration E298. Three hours of lecture per week. Formerly Business Administration E298. (SP) Staff

219. International Management. (3) Three hours of lecture per week. Prerequisites: Business Administration E201B. Formerly Business Administration E219B. This course will examine the role of capital flows and the global financial system in international economic growth and development. Three hours of lecture per week. Formerly Business Administration E298. (F,SP) Staff
222. Financial Information Analysis. (3) Three hours of lecture per week. Formerly Business Administration E222. Issues of accounting information evaluation with special emphasis on the use of 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. Man- agement accounting on an information systems basis 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 de- velop the methods by which managerial accountants can provide the necessary data through appropriate budget, cost, and other informational systems.

224B. Advanced Managerial Accounting. (2,3) Forty-five hours of work per unit per term. Prerequi- sites: E204 or equivalent, Formerly Business Ad- ministration E202A and E202B. Formerly Business Administration E224. This course in- cludes the theory of management accounting. Its application in modern organizations, and related prob- lem areas included in recent CPA and CMA exami- nations. (F,SP) Staff

225. Management Planning and Control Systems. (3) Three hours of evening lecture per week. Prerequi- sites: Completion of all MBA core courses or their equivalent. Formerly Business Administration E229. Strategic planning and management control systems, bud- geting, internal pricing, and related topics concerned with planning and control of complex organizations including multi-national firms and not-for-profit organiza- tions. Designed for students interested in manage- ment regardless of major field. (SP)

227B. Topics in Taxation. (3) Course may be re- peated for credit. Three hours of lecture per week. Prerequi- sites: Business Administration E202B and E202B or equivalents. Formerly Business Administration E227B. This course covers various topics in 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: Busi- ness Administration E230. Formerly Business Ad- ministration E234. Financial policies of firms including asset acquisition and replacement, capital structure, dividends, working capital, and mergers. Development of theory and application to financial manage- ment regardless of major field. (SP)


233. Financial Institutions and Markets. (3) Three hours of lecture and one hour of optional discussion per week. Prerequisites: Business Administration E233. This course will analyze the role of financial markets and financial institutions in allocating capital. The major focus will be on debt contracts and securities and on innovations in the bond and money markets. The functions of commercial banks, and other intermediaries will be covered, and aspects of the regulation of these insti- tutions 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 E232. Formerly Business Administration E235. Normative models for investment management, valuation of securities, behavior of security prices, the function and regulation of security markets, and empirical studies on security prices and portfolio behavior. 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 investment management, valuation of securities, behavior of security prices, the function and regulation of security markets, and empirical studies on security prices 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 E203 or equivalent, Formerly Business Administration E239. Introduction to alter-native investment strategies and styles as practiced by leading money managers. A money manager will be brought to campus to discuss his or her general investment philosophy. In the other half, stu- dents, practitioner, 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 ques- tions relating to the firm’s investment value. (F,SP) Staff

237. Topics in Finance. (5-3) Course may be re- peated for credit. One-half to three hours of lecture per week. Advanced study of the field of Finance. Topics will vary from year to year and will be announced at the beginning of each semester. (F,SP)

240. Introduction to Management Science. (3) Three hours of evening lecture per week. Prerequi- sites: Busi- ness Administration E241. Strategic issues in- volved in planning the production and logistics of a firm and models of those behaviors that are useful for the firm’s strategic planning. Topics include models of a firm’s capacity expansion, facility location, and technol- ogy selection decisions; learning curve strategies; and industry cost models.

244D. Management Information Systems. (3) Three hours of lecture per week. Prerequisites: Business Administration E244. Formerly Business Administration E244. The course covers the management and organizational issues associated with the implementation and growth of organizations of computer-based adminis- trative information systems. A management perspec- tive is maintained throughout, and technical issues in- troduced are subordinate to the management perspective.

247A. Topics in Manufacturing and Operations. (5-3) Course may be repeated for credit. Three to five 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)

251. Human Resources Management. (3) One 3-hour evening lecture per week. Prerequisites: Business Administration E205 or consent of instructor. Formerly Business Administration E251. A study of the problems and issues associated with the personnel function. Topics include the processes of re- cruitment, selection, placement, training, and evalu- ation of people within organizations. The role of the staff manager with respect to the work of human resources; the location of tasks and people is considered, with em- phasis on the implications of research for management problems and policies. (F,SP) Staff

252. Negotiations and Conflict Resolution. (3) Three hours of lecture per week. Prerequisites: Business Administration E205 or equivalent. Formerly Business Ad- ministration E252. A study of the negotiations process, including negotiations among buyers and sellers, man- agers and subordinates, company units, companies and their customers, and labor and management (both collective and individual). Both the two-party and multi-party relations are cov- ered. Course work includes reading, lectures, dis- cussion of case material, and simulations of real negotiations. Emphasis is placed on the role of third parties in resolving disputes. (F,SP) Staff

255. Creativity in Business. (3) Three hours of lec- ture per week. Prerequisites: Business Administration E205 or consent of instructor. Formerly Business Ad- ministration E255. The course introduces 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 creativ- ity in their own working lives. (F,SP)

257. Topics in Organizational Behavior and Indus- trial Relations. (5-3) Course may be repeated for credit. One-half to three hours of lecture per week. Ad- vanced 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)

260. Consumer Behavior. (3) Three hours of lecture per week. Prerequisites: Business Administration E206 or equivalent. Formerly Business Administration E260. Examines concepts and theories from behavioral sci- ence useful for the understanding and prediction of marketplace behavior and demand analysis. Empha- llizes applications to marketing planning, promotion pol- icy planning and strategy and to various decision areas within marketing. (F,SP)

261. Marketing Research: Tools and Techniques for Data Collection and Analysis. (3) Three hours of lecture per week. Formerly Business Administration E261. Marketing research objectives will be covered and the topics of qualitative research, surveys, ex- periments, sampling, data analysis, and information system management. (F,SP) Staff

262. Brand Management and Strategy. (3) Three hours of lecture per week. Prerequisites: Business Administration E262A. Formerly Business Administration E262A. The focus of this course is on developing student skills to formulate and critique complete market- ing 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 Market- ing. (5-3) Three hours of lecture per week. Prerequisites: Business Administration E206. Formerly Business Administration E262B. Information technology has al- lowed firms to gather and process large quantities of data about consumers and potential customers. In this course we will analyze the effects of the use of computer-based promotional tools, and marketing campaigns. However, few firms have the expertise to intelligently act on such information. This course addresses this shortcoming by teaching stu- denents how to use customer information to better mar-
ket 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 or equivalent. Formerly Business Administration E264. High technology management and social forces that govern the channel evolution. It reviews the channel and social forces that govern the channel evolution. It provides an overview of technological change at a pace significantly faster than for most goods in the economy. Under such circumstances, the market behavior of high technology firms differs in some ways from the usual. The purpose of this course is to explore these differences. (SP) Staff

265. Integrated Marketing Communications. (3) Three hours of lecture per week. Prerequisites: Business Administration E206 or equivalent. E260 is recommended. Formerly Business Administration E265. A specialized course in advertising, focusing on management and decision-making. Topics include objective-setting, copy decisions, media decisions, budgeting, 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. (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 drivers of the channel. Second, each task for the channel is completed through the examination of tools: t000e3ct, manage, and motivate channel partners. (SP)

267. Topics in Marketing. (5-3) Course may be repeated for credit. One-half to three hours of 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 purchasing, regulation, resource allocation, economic stabilization, planning and sponsorship of economic development. “Inter- penetrating” activities include space, defense, atomic energy, public utility, and foreign business operations. (F,SP)

271. The Interaction of Business and Government. (3) Three hours of evening lecture per week. Prerequisite: Business Administration E206 or equivalent. Formerly Business Administration E271. Theory of the mixed economy. Methods of interaction between government and business including government purchasing, regulation, resource allocation, economic stabilization, planning and sponsorship of economic development. “Inter-penetrating” activities include space, defense, atomic energy, public utility, and foreign business operations. (F,SP)

277. Special Topics in Business and Public Policy. (1-3) One to three hours of lecture per week. Prerequisites: Business Administration E207 or equivalent, or consent of instructor. Formerly Business Administration E278. Topics vary by semester at discretion of instructor. Topic areas include business and professional ethics and the role of corporate social responsibility in the mixed economy; managing the external affairs of the corporation, including management, the corporation and stakeholder relations; technology policy, research and 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 E280. Intensive review of literature in the theory of land utilization, urban growth and real estate taxation and land use rights and land tenure. Includes residential and non-residential markets; construction, debt and equity financing; public controls and policies. (F,SP)

283. Real Estate Financing. (3) Three hours of lecture per week. Prerequisites: Business Administration E280; and background in the basics of finance, microeconomics, macroeconomics, statistics and quantitative analysis. Formerly Business Administration E283. 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 financing circumstances and real estate evaluation. (F,SP) Staff

284. Seminar in Real Estate Investment Analysis. (3) Three hours of lecture per week. Prerequisites: Consent of instructor. Formerly Business Administration E284. Analysis of selected problems and special studies; cases in residential and non-residential development and financing, urban redevelopment, real estate taxation, mortgage market developments, equity investments, valuation, and financing. (F,SP) Staff

287. Special Topics in Real Estate Economics and Finance. (1-3) Course may be repeated for credit. One hour of lecture per week per unit. Prerequisites: Business Administration E280 and consent of instructor. Formerly Business Administration E287. Topics vary each semester. Formerly Business Administration E280. Staff

290D. Design as Strategic Management Issue. (2) Two hours of lecture per week. Prerequisites: Graduate standing, Formerly Business Administration E290D. This course looks at what is winning or losing in international competition in high technology industries. It will emphasize the interaction between business strategies and the economic and political variables that shape the development of high technology tactics. Economic and social drivers, organizational structure, portfolio theory and real estate asset allocation. (F,SP) Staff

290G. International Trade and Competition in High Technology. (2) Two hours of lecture per week. Prerequisites: Graduate standing. Formerly Business Administration E290G. This course will provide the student with specialized knowledge in some area of managerial economics. Topics include multimedia business presentations, personal leadership development, diversity management, and making meetings work. Topics will vary from semester to semester. (F,SP) Staff

291A. Speaking As a Leader. (2) One hour of lecture and two hours of discussion per week. Formerly Business Administration E291A. Leaders must be capable of inspiring commitment in their constituencies rather than merely demanding compliance. 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)

291T. Topics in Managerial Communications. (1-3) Course may be repeated for credit. One to three hours of lecture per week. Formerly Business Administration E291T. This course will provide the student with specialized knowledge in some area of managerial communication. Topics include multimedia business presentations, personal leadership development, diversity management, and making meetings work. Topics will vary from semester to semester. (F,SP) Staff

292A. Management in the Public and Not-for-Profit Sector. (2) Forty-five hours or more. Prerequisites: Business Administration E201A and E201B. Formerly Business Administration E215. Planning-programming-budgeting systems and benefit-cost analysis for resource allocation and planning in the public sector. Use of pricing in public enterprise. Efficiency when profit criteria are absent. Applications in natural resources, medical services, transportation, and education. (F,SP) Staff

292M. Topics in Nonprofit and Public Management. (1-3) Course may be repeated for credit. One to three hours of lecture per week. Formerly Business Administration E292M. Advanced study in the field of nonprofit and public management. Week to week and will be announced at the beginning of each semester. (F,SP) Staff

293. Individually Supervised Study for Graduate Students. (1-5) Course may be repeated for credit. One to five hours of independent study per week. Formerly Business Administration E293. Individually supervised study of subjects not represented in the regular schedule, approved by faculty adviser as appropriate for the student’s program. (F,SP) Staff

295B. Venture Capital and Private Equity. (3) Three hours of lecture per week. Prerequisites: Business Administration E295B. Formerly Business Administration E295. Examine the role of venture capital and private equity in the creation of start-ups and value creation. This course is designed to introduce students to the innovation process and the management of new ventures. This course will focus on the process of invention and entrepreneurship. The course will cover the basics of venture capital and private equity. (F,SP) Staff
course intended to provide the background, tools, and themes of the venture capital industry. The course is organized in 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—reviews many of the key ideas developed in the course. (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

299E. Competitive Strategy. (3) Three hours of lecture per week. Prerequisites: Business Administration E202A, E203, E205, E206. Formerly Business Administration E296. Identifies the management challenges facing international firms. Attention to business strategies, organizational patterns, and the role of the global environment. Special attention to the challenges of developing and implementing global new product development strategies when industrial structures and governmental policies aim to achieve their objectives. Efficacy of joint ventures and strategic alliances. Implications for industrial policy and global governance. (F,SP) Teece

299E. Competitive Strategy. (3) Three hours of lecture per week. Prerequisites: Business Administration E202A, E203, E204. Formerly Business Administration E296. Examines optimal production and pricing policies for firms in competitive environments; optimal strategies through time; strategies in the presence of imperfect information. How differing market structures and governmental policies affect the decision-making process. Efficacy of joint ventures and strategic alliances. Implications for industrial policy and global governance. (F,SP) Teece

299M. Strategic Marketing Planning. (3) Three hours of evening seminar per week. Prerequisites: Business Administration E202B, E203, E205, E206. Formerly Business Administration E296. Examines the menu of available assets, the institutional structure of U.S. and international financial markets, and the market mechanisms for trading securities. Topics include discounting, capital budgeting, historical behavior of asset returns, and diversification and portfolio theory. The 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

209A. Global Economic Environment. (2) Ten hours of lecture for three weeks. This core 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 in both closed 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 a number of countries and a variety of economies to illustrate theoretical concepts. (F,SP) Staff

202A. Financial Accounting. (2) Ten hours of lecture for three weeks. Formerly Business Administration 254. This course examines accounting measurement for general-purpose financial reports. An objective of the 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. Formerly Business Administration 253. This course focuses on 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 sections include (1) information for planning and decision-making, (2) information received during operations (cost accounting), and (3) information for control and performance evaluation. (F,SP) Staff

203. Finance. (2) Ten hours of lecture for three weeks. This core course examines the menu of available assets, the institutional structure of U.S. and international financial markets, and the market mechanisms for trading securities. Topics include discounting, capital budgeting, historical behavior of asset returns, and diversification and portfolio theory. The 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. Operations Management. (2) Ten hours of lecture for three weeks. Formerly Business Administration 253. This core course provides students with an understanding of the basic issues involved in managing a manufacturing-based business. The tools of operations management 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) Ten hours of lecture for three weeks. 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: 202A or equivalent. This core course provides an overview of the marketing system and the marketing concept, buyer behavior, market research, segmentation, market targeting, marketing mixes and strategies, and evaluation of marketing performance in the economy and society. (F,SP) Staff

207. Ethics and Responsibility in Business. (1) One and one-half hours of lecture for ten weeks. This course provides students with the ability to anticipate, 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 developing and implementing solutions to a business strategy, competitive positioning, planning, and the implementation of an integrated business program. Students will consider competing strategies as components of a total strategy for achieving the business objectives. Students often at the expense of their rivals, from the perspective of a general, enterprise-level manager charged with overall responsibility for 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 market transactions; balance of payments, open economy macroeconomics, exchange rate determination, history of the international financial system, arbitrage and hedging, and international aspects of financial decisions. (F,SP) Staff

222. Financial Information Analysis. (2) Ten hours of lecture for three weeks. Prerequisites: Business Administration 204 or consent of instructor. This advanced elective course addresses issues of accounting information evaluation with special emphasis on the use of financial statement analysis in making investment decisions. It explores the implications of recent research in finance and accounting for external reporting issues and utilizes models that describe the user’s decision context. (F,SP) Staff

234. 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 design and marketing of successful products and services. (F,SP) Staff

252. Managerial Negotiations. (2) Ten hours of lecture for three weeks. This seminar explores the negotiation process, including negotiations among buyers and sellers, managers and subordinates, companies and governmental agencies, and management and labor. Both two-party and multi-party relations are covered. Course work includes readings, lectures, and practice in case material and 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 as organizational development, environmental determinants of organization structure and decision-making behavior, management of professionals, management in multinational structures, cross-cultures, and management of complex organizations, industrial relations systems and practices. (F,SP) Staff

264. High Technology Marketing. (2) Ten hours of lecture for three weeks. Prerequisites: 206 or equivalent. This advanced elective course examines the development of new 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 concept must be implemented in some ways different from the usual. The purpose of this advanced elective course is to explore these differences. (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

Executive Master’s in Business Administration

200G. Decision Models. (1) Five hours of lecture for three weeks. This core course introduces students to quantitative concepts, techniques, and software with which managers should be familiar. The objective of this course is to improve managerial decision making by introducing managers to optimization techniques, simulation, and project management. (F,SP) Staff

205S. Data Analysis for Management. (2) Ten hours of lecture for three weeks. Formerly Business Administration 205S. The objective of this core course is to make students critical consumers of statistical analysis using available software packages. Key concepts include interpretation of regression analysis, model formation and testing, and diagnostic checking. (F,SP) Staff
the main topics encompassed by management 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 technological ideas? The course introduces the concept of value creation and its implications for firms and individuals. (F,SP) Staff

292P. Strategic CSR. (1) One and one-half hours of lecture for ten weeks. Discuss the field strategic CSR through the lens of a problem (e.g., green marketing, philanthropy, supply chain management) and engage in hands-on activities. Students will have opportunities to engage in socially responsible practices. It will provide students with a flavor of the complex dilemmas one can encounter in trying to do both good for society and good for shareholders. It looks as CSR from a corporate, strategy perspective, and how the support core business objectives, core competencies, and bottom line profits. (F,SP) Staff

293. Individual Supervised Study for Graduate Students. (1-6) Course may be repeated for credit as topic varies. One to four hours of independent study per week. Prerequisites: Consent of supervising faculty, individually supervised study of subjects not available to the student in the regular schedule, approved by faculty adviser as appropriate for the student’s program. (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 marketing strategies for new ventures, as well as the resolution of specific, major long-term problems, in small 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 national and/or international impact. It will take two perspectives: the entrepreneur's and the investor’s, and it will have a special focus on the venture capital process, including seed, early and late stage financing. (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 vary from year to year and will be announced at the beginning of each semester. (F,SP)

298A-298B. International Field Study. (3) Eight month field study course. Credit and grade to be awarded on completion of sequence. This required two-term course entails individual research on and direct study of international businesses and the management challenges of those businesses in preparation for a one-week field study abroad (in Asia or Europe) in the final term of the program. The course culminates in a report on an applied management project undertaken in connection with the field studies and company visits. (F,SP) Staff

298C. International Field Seminar. (3) Course may be repeated for credit. Thirty hours of fieldwork per week for five weeks. Prerequisites: 298A. This required course entails an experimental 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 Investments. (3) Six hours of lecture for seven and one-half weeks. Formerly Business Administration 230A. This course covers the basic properties of asset pricing. It begins with the standard discounted cash flow analysis, and generalizes this approach to develop the No Arbitrage Pricing Theory for financial assets. The course will also cover important topics in fixed income securities, derivatives, contingent claims, basic principles of optimal portfolio theory, models of equilibrium asset pricing, including CAPM and related Factor Models. (F,SP)

230B. Fundamentals of Corporate Finance. (2) Four hours of lecture for seven and one-half weeks. Formerly Business Administration 230B. This course teaches students to apply a business valuation framework to solve financial 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 introduces the student 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 derivatives, and issues related to European and American options, 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: Business Administration 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 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 non-parametric techniques commonly used in finance (MLE, GMM, GARCH models) and will be introduced to financial databases and estimation application software to estimate volatilities and correlations and their stability. (F,SP)

230F. The Design of Securities for Corporate Finance. (2) Two hours of lecture per week for eight weeks. Prerequisites: Business Administration 230A, 230B. Formerly Business Administration 230F. This course teaches students to apply the business valuation framework to solve financial problems. Issues related to corporate governance and agency problems are also addressed. (F,SP) Staff

230G. Fixed Income Markets. (2) Two hours of lecture per week for seven weeks. Formerly Business Administration 230G. This course covers fixed income security markets, pricing and uses of fixed income securities to price the optimal time for a firm to invest or liquidate, and how the supply and demand for fixed income securities affects bond prices. 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 in liquid capital, and various applications. (F,SP) Staff

230H. Financial Risk Management and Management. (2) Four hours of lecture for seven and one-half weeks. Prerequisites: Business Administration 230A-230B. Formerly Business Administration 230H. This course examines risk management 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 port folios such as duration, portfolio beta, factor sensitivities, asset-liability management, dynamic portfolio analysis and extreme value analysis and other risk management techniques. (F,SP)

230I. Applied Financial Project. (0.1-3) Independent study. Credit and grade to be awarded on completion of sequence. Prerequisites: Participation requires prior approval of the supervising faculty. Formerly Business Administration 230I. Students will be required to complete an applied quantitative finance project that explores a quantitative finance problem that might be met in practice and involves the development or use of quantitative financial techniques. (F,SP) Staff

230J. Fundamentals of Accounting. (1) One to two hours of lecture for seven 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

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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 student to the questions from stochastic analysis employed in mathematical finance. Topics include: stochastic processes, Brownian motion, stochastic integral, differentials 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: 230D. This course builds on the techniques learned in 230D. Quantitative Methods for Derivative Pricing. The focus is to gain a deeper analysis of 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 most challenging 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. Behavioral finance theory has greatly contributed to our understanding of financial markets. This course discusses the common biases and heuristics identified by psychologists. Topics will include over-confidence, the availability heuristic, anchoring and adjustment, fairness, and prospect theory. We will try to gain an understanding of how these biases affect managers, investors, and financial markets. (F,SP) Staff

230U. Introduction to Financial Programming. (1) Two and one-half hours of lecture every other week. Prerequisites: 230D. This course introduces the student to the modeling techniques and software skills necessary to understand the dynamics of modern financial markets and to how accounting principles may influence financial decisions. (F)

231A. Accounting in the Corporate Sector. (4) Three hours of seminar per week. Formerly Business Administration 231A. An introduction to accounting and tax issues related to the corporate sector. A basic understanding of financial accounting and tax issues related to derivatives and hedging. It also fulfills the needs of students seeking jobs in the corporate sector and/or to how accounting challenges posed by modern financial instruments and to how accounting principles may influence financial decisions. (F,SP) Staff

231B. Doctoral Seminar in Accounting II. (3) Three hours of seminar per week. Prerequisites: Business Administration 230A or equivalent, and Economics 201A-201B. Formerly Business Administration 223B. A critical evaluation of recent accounting literature involving empirical research. (F,SP) Staff

231C. Doctoral Seminar in Accounting III. (3) Three hours of seminar per week. Prerequisites: Business Administration 230A or equivalent, and Economics 201A-201B. Formerly Business Administration 223C. A critical evaluation of recent accounting literature involving empirical research. (F,SP) Staff

231D. Doctoral Seminar in Accounting IV. (2) Two hours of seminar per week. Prerequisites: Business Administration 230A or equivalent, and Economics 201A-201B. Formerly Business Administration 223D. Exploration of issues related to the internal accounting systems of large firms. The first part of the course focuses on the theory of mechanism design, while the second part applies this theory to a variety of managerial accounting questions. (F,SP) Staff

231E. Research Seminar in Accounting. (2-4) Course may be repeated for credit. One-half to three hours of seminar per week. Advanced study in the field of Accounting. Topics will vary from year to year and will be announced at the beginning of each semester. (F,SP)

231F-239D. Doctoral Seminar in Finance. (3;3;3;3) Students will receive no credit for 239A after taking 229A. Three hours of seminar per week. Prerequisites: Business Administration 203 and 292C or other introduction to microeconomics: Economics 201A-201B or Formerly Business Administration 238A-238D. Recent developments in financial economics, including the theory of intertemporal choice under certainty or uncertainty, portfolio theory, asset pricing, capital market equilibrium, valuation of uncertainty, problems in information, financial econometrics, and empirical verification of financial models. (F,SP)

235R. Research Seminar in Finance. (2-4) Course may be repeated for credit. One-half to three hours of seminar 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)

239A. Institutions, Interest Groups and Public Policy. (3) Three hours of seminar per week. Formerly Business Administration 281B. Senior seminar on the study of interest groups in economic and political life. (3) Formerly Business Administration 281B. This course studies the role of groups in public decision-making. Special attention is devoted to the study of groups in the United States political economy with an emphasis on how such groups affect the political process. (F,SP)

239B. Research in Micro-Organizational Behavior. (3) Three hours of seminar per week. Prerequisites: RH 229D or consent of instructor. Formerly Business Administration 254A. Research in the study of micro-organizational behavior, including its sociological, political and economic foundations. Topics include: leadership, organizational commitment, organizational culture, control and participation in organizations, creativity, personality, socialization processes, and organizational psychology. (SP)

240Q. Corporate Strategy and Technology. (3) Three hours of seminar per week. Prerequisites: Ph.D. student or consent of instructor. Formerly Business Administration 279A. The course begins with a review of the literature on strategy and technology and links relevant empirical research in economics and political science. (F,SP)

240R. The Political Economy of Capitalism. (3) Three hours of seminar per week. Prerequisites: Ph.D. student or consent of instructor. Formerly Business Administration 279B. Comprehensive introduction to historical development of contemporary capitalism. Class will compare the ‘classical’ interpretation of political economy and their alternative explanations of markets, politics, class, and culture in industrial development; (2) provide an overview of the history of the United States economic system; (3) study the relationship between economic and business cycles and the development of modern political economy; (4) examine the competing theories of the corporation. (SP)

240S. Corporate Strategy and Technology. (3) Three hours of seminar per week. Prerequisites: Ph.D. student standing or consent of instructor. Formerly Business Administration 279C. The course has two broad objectives: (1) providing an overview of important work (mainly empirical) in the economics of technological change and technology policy; and (2) analyzing the role of technological and organizational innovation in firm strategy and performance. (F,SP)
297S. Research Seminar in Real Estate. (2-4) Course may be repeated for credit. Three hours of seminar per week. Advanced study in the field of Real Estate. 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) 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: PhD 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 credit. Two hours of lecture per week. Individual student 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. degree. (F,SP)

300. Teaching Business. (2) Six hours of lecture and 24 hours of discussion per term. Must be taken on a satisfactory/unsatisfactory basis. This course will cover the broad range of knowledge and skills necessary to teach in top business schools. Teaching effectively requires a myriad of pedagogical styles and techniques, as well as the confidence and preparation necessary to convey the course material. This course seeks to prepare doctoral students for careers as faculty in business schools, giving them the insight and experience that will make their first courses successful. Students will learn effective teaching strategies by observing mentor teachers, reading pedagogical texts, and openly discussing the challenges and rewards of business instruction with experienced faculty and graduate student instructors (GSIs). Students will also learn the administrative requirements of running courses so as to better facilitate learning in the future classes. (F,SP) Staff

Celtic Studies

(College of Letters and Science)

Program Office: 6303 Dwinnelle Hall #2690, (510) 642-4484
Undergraduate Student Services: (510) 642-4661
http://www.is.berkeley.edu/Dept/Celtic
Director: Gary Holland, Ph.D.

Advisory Committee

Thomas Brady (History)
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Daniel Mela (Phonetic Celtic Studies)
Jennifer Miller (English)
Annalise Reijn (Celtic Studies)
Eve Sweetser (Linguistics)
Joan Keefe (Celtic Studies, Emerita)
Blake Spahr (German, Emeritus)
Robert Tracy (English, Emeritus)

Undergraduate Assistant in 6303 Dwinnelle 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 of the five disciplinary areas chosen from anthropology, art history, 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 Dwinnelle Hall or Professors Eve Sweetser or Gary Holland, Department of Linguistics, 1203 Dwinnelle Hall.

Major Requirements

Lower Division. Celtic Studies 70 plus two semester courses from the following courses: Celtic 151A, 151B, 151C, 151D, and 152, 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. One class from the following courses may be repeated for credit: 102A, 102B, 105B, 105Y, 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 courses not used 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; 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 Dwinnelle Hall #2690, or Professor Eve Sweetser or Professor Gary Holland, at the Department of Linguistics, 1203 Dwinnelle Hall #2690.

Honors Program

In order for students to graduate with honors in Celtic studies, they must have achieved an overall grade-point average of 3.3 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 essential, which should normally emanate from H185, 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 are more suitable for students not specializing in courses in culture, 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) 642-1556; http://www.is.berkeley.edu/bpsa/.
16. emphasizing progress in conversation, grammar, and idiom. Using tenses 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 work, and students will begin learning about Welsh culture as they learn the language. (SP) Klar, Rejhon

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. Prerequisites: Freshman and Sophomore standing. Group study of 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 passed/not passed basis. Prerequisites: Freshman and Sophomore standing and consent of instructor. Directed individual study and special topics approved by Celtic Studies. (F,SP) Staff

Upper Division Courses

102A. Elementary Breton. (4) Three hours of lecture and one optional hour of discussion per week. Prerequisites: 101A or equivalent. Formerly 1A-B. Voices of the Celtic World. (4) Three hours of lecture and one hour of discussion per week. Prerequisites: Subject A or equivalent. Formerly 1A-1B. Reading and composition course based on works of Celtic writers both in English and in translations from Celtic. Introduction to training in critical 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 a Celtic milieu. Readings will be chosen from a variety of modern Irish, Welsh, Welsh 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, and read 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 precursors and consonant mutations, 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, Rejhon

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 evidence for the existence of the Celtic language group in 1st millennium B.C. Europe. Celtic religion and comparative Indo-European mythology. Discussion of the validity of classical reports of the Celts. Celtic tribal migrations in the highland north of Europe; the foundation of the British. The debasement 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 for three or six weeks. One hour of seminar per week for ten weeks. Three hours of seminar per week for five or 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: 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 of college. Department to determine departmental 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 Irish prose. (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

Graduate Studies

Although no graduate degrees in Celtic studies are offered at present, it is possible to pursue research in Celtic languages, literature, history, anthropology, linguistics, and related departments. Dissertations on Celtic subjects have been accepted in the departments of Comparative Literature, History, Linguistics, Rhetoric, English, French, and Anthropology and in the Folklore Program.

Lower Division Courses

R1A-R1B. Voices of the Celtic World. (4) Three hours of lecture and one hour of discussion per week. Prerequisites: Subject A or equivalent. Formerly 1A-1B. Reading and composition course based on works of Celtic writers both in English and in translations from Celtic. Introduction to training in critical 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 a Celtic milieu. Readings will be chosen from a variety of modern Irish, Welsh, Welsh Scots, and Breton writers. R1A satisfies the first half of the Reading and Composition requirement, and R1B satisfies the second half. (F,SP) Staff

119A-119B. Welsh and Arthurian Literature 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 the course will be coordinated with 106A-106B 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 medieval Celts, as they are reflected in a selection of written and oral texts. The course will draw on legal texts, religious scriptures, and chronicles and histories. All works will be read in English translation. Rejhon

129. Modern Celtic Cultures and Folklore. (4) Course may be repeated for half credit under different instructor. Three hours of lecture per week. A comparative introduction to the cultures of the Celtic peoples, especially the modern linguistic cultures, from a comparative perspective. Examination of the role of minority cultures and minority languages in larger cultural entities. Themes will vary with instructor, 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, satires, classical lyric poetry, and bardic 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. (4) Three hours of lecture and three hours of laboratory per week. Prerequisites: 119A-119B or consent of instructor. This course continues the Welsh Studies 16-86 sequence. Advanced grammatical concepts are introduced and vocabulary building (especially idioms) is emphasized. Students read materials such as magazines, newspapers, and popular novels. Regular language laboratory attendance is required. (F,SP) Staff

145A. Intermediate Irish Language. (4) Three hours of lecture and one hour of laboratory per week. Prerequisites: Two semesters Irish language or consent of instructor. The third level course in modern spoken Irish designed for students who have completed two semesters of formal instruction. Continued stress on vocabulary building and reading of texts with intensive conversation drill are offered. Idiom usage will be reinforced in both oral and written exercises. Class activities will include conversation and discussion of assigned texts in Irish. (F,SP) Staff

145B. Modern Irish Level Four. (4) Three hours of lecture and one hour of laboratory per week. Prerequisites: 144A or consent of instructor. The fourth semester of Modern Irish. Readings in Irish literature will be a major focus of the curriculum, but will also be accompanied by advanced grammatical instruction and conversational practice. (F,SP) Staff

146A. Medieval Welsh Language and Literature. (4) Three hours of lecture per week. Selected works of medieval Welsh prose and poetry are read in Middle Welsh. Grammar instruction and in-class translations accompany lectures on key themes in medieval Welsh literature and tradition. (F,SP) Klar, Rejhon

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 in conjunction with company lectures on key themes in medieval Welsh literature and tradition. (F,SP) Klar, Rejhon

161. Celtic Linguistics. (4) Three hours of lecture and one hour of laboratory per week. Prerequisites: Prior acquaintance with at least one Celtic language, consent of instructor. Formerly 145. Topics in the linguistics of the Celtic languages. Likely subject matters include synchronic structure of a Celtic language or languages, history of the Celtic language family, philology and paleography of older Celtic texts, sociolinguistics of the modern Celtic languages, linguistic char-
H195A-H195B. Honors Course. (3,3) Independent study. Prerequisites: Open only to honors or 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 earned upon completion of a suitable program which is not covered by other Celtic studies courses. Topics might include (but would not be limited to) the Celtic romantic tradition, the Celts in films, Celtic art, nationalist politics in Celtic regions, and current trends in Celtic research. (F,SP) Klar, 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. (1-4) Course may be repeated for credit. Individual conferences. Must be taken on a passed/not passed basis. Successful completion of the course will normally, but not necessarily, mean the awarding of honors. (F,SP) Staff

Chemical Engineering (College of Chemistry)

Department Office: 201 Gilman Hall #1462, (510) 642-2291
Undergraduate Majors Office: 420 Latimer Hall #1460, (510) 642-2492
http://cheme.berkeley.edu

Chair: Arup K. Chakraborty, Ph.D.

Professors
Nitis P. Balsara, Ph.D. Rensselaer Polytechnic Institute. Microstructured polymer materials, light and neutron scattering
Alex T. Bel, Sc.D. Massachusetts Institute of Technology. Heterogeneous catalysis, reaction engineering
Harvey W. Blanch, Ph.D. University of New South Wales. Biocatalytic engineering, enzymology
Jeffrey A. Reimer, Ph.D. California Institute of Technology. Physical chemistry, semiconductor science
Jay D. Keasling, Ph.D. University of California, Berkeley. Enzymology, energy conversion, thermodynamics
Marion M. Dunn (Emeritus), Ph.D. University of Minnesota. Polymer processing analysis
Leroy A. Bromley (Emeritus), Ph.D. University of California, Berkeley. Process simulation, transport phenomena
Elton J. Cairns (Emeritus), Ph.D. University of California, Berkeley. Catalysis, reaction engineering, deactivation
John S. Newman (Vice Chair), Ph.D. University of California, Berkeley. Electrochemical engineering, corrosion
John T. Radke, Ph.D. Pennsylvania State University. Surface and colloid chemistries
Enrique Iglesia, Ph.D. Stanford University. Transport in biological systems

Lecturers
Arnold L. Grossberg, M.S. University of Michigan. Process engineering
Paul J. Poffle, Ph.D. University of Berkeley. Technical communications

Adjunct Professors
Michel Boudart, Ph.D. Princeton University. Heterogeneous catalysis, surface science
Brian L. Maiorella, Ph.D. University of California, Berkeley. Biochemical engineering, pharmaceutical product development
David V. Schaffer, Ph.D. Massachusetts Institute of Technology. Biochemical engineering, cellular bioengineering
Rachel Segalman, Ph.D. University of California, Santa Barbara. Polymer physics, self-assembly, plastic electronics

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John S. Newman (Vice Chair), Ph.D. University of California, Berkeley. Electrochemical engineering, corrosion
Jay D. Keasling, Ph.D. University of California, Berkeley. Enzymology, energy conversion, thermodynamics
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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 semester. 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. 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 C96 and Chemical Engineering 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)

Upper Division Courses

140. Introduction to Chemical Process Analysis. (4) Three hours of lecture and one hour of discussion per week. Prerequisites: C7 or better; Engineering 77N, Computer Science 9A or 61A, or an acceptable computer programming transfer course for science or engineering students; and Physics 7B (may be taken concurrently). Material and energy balances applied to chemical process systems. Determination of thermodynamic properties needed for such calculations. Sources of data. Calculation procedures. (F) Staff

141. Chemical Engineering Thermodynamics. (3) Three hours of lecture and one hour of discussion per week. Prerequisites: 140 with grade of C or higher. Thermodynamic behavior of pure substances and mixtures. Properties of solutions, phase equilibria. Thermodynamic properties. 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 grade of C or higher. Principles of fluid mechanics applied with computerized 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. Principles of mass transfer with application to chemical engineering. Principles of mass and heat transfer; mass transfer coefficients. Design of staged and continuous separation 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 investigating the applications of chemical 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. Transport phenomena principles 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 technologies such as microelectronics processing, biotechnology, and materials processing. (F,SP)

160. Chemical Process Design. (4) Three hours of lecture, one hour of discussion, and three hours of computer laboratory per week. Prerequisites: 142; 150B. Design of chemical processes equipment. 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 55 or equivalent. Understanding of control of chemical processes and methods and theory of their control. Implementation of computer control systems on laboratory processes and process simulations. (F,SP)

170. Biochemical Engineering. (3) Students will receive no credit for 170 after taking 170E or 170M. Three hours of lecture per week. Prerequisites: 150B. Design, operation, and analysis of processes in the bio-chemical industries. Fermentation and recovery of bio-chemical products. (SP)

170E. Environmental Biotechnology. (3) Student will receive no credit for 170E after taking 170 or 170M. Three hours of lecture per week. Prerequisites: 150B or Civil Engineering 105 or equivalent or consent of instructor. This course will focus on the application of biotechnology and chemical engineering to environmental problems. The second part of the course will focus on the application of the basic principles of chemical engineering to the environment. In particular, the class will look at homogeneous and heterogeneous systems. The second part of the course will introduce students to microbial growth, physiology, and genetics and how these can be manipulated to degrade toxic contaminants. In the final part of the course, students will use the microbiology and chemical engineering skills together to solve some very important environmental problems. Case studies from the literature will be used to demonstrate these principles. Heavy emphasis will be placed upon the recent literature. (SP)

C170L. Biochemical Engineering Laboratory. (3) Six hours of laboratory and one hour of lecture per week. Prerequisites: 170 or 170E (may be taken concurrent or on a pass/no credit/no grade basis). Laboratory techni- ques for the cultivation of microorganisms in batch and continuous cultures. Enzymatic conversion pro- cesses. Recovery of biological products. Also listed as Chemistry C170L. (SP)

170M. Marine Biotechnology. (3) Students will receive no credit for 170M after taking 170 or 170E. Three hours of lecture per week. Prerequisites: 150B. Fundamental principles of chemical engineering applied to the design, operation, and analysis of bioproc- esses, with an emphasis on the emerging industry of marine biotechnology. Of particular interest are the cultivation of marine microorganisms and the recovery of marine bioproducts. Topics include new strategies for the discovery and development of new marine bio- products, bioreactor design for marine bacteria and photosynthetic microalgae, including scale-up, and downstream processing of complex marine natural products. (F)

171. Transport Phenomena. (3) Three hours of lecture per week. Prerequisites: 150B. Study of moment- um, energy, and mass transfer in laminar and tur- bulent flow. (F)

176. Principles of Electrochemical Processes. (3) Three hours of lecture per week. Prerequisites: 141; 150B or equivalent. Electrochemical techniques; electrochemistry; equilibria, kinetics, and transport processes. Technical electronics and electrochemical energy conversion. (F)

C178. Polymer Science and Technology. (3) Three hours of lecture/laboratory per week. Prerequisites: One semester of organic chemistry and physics recom- mended; 150A, equivalent fluid mechanics or con- sent of instructor. Introduction to physical and chem- ical behavior of organic polymers. Properties of solu- tions, melts, glasses, elastomers, and crystals. Engi- neering applications emphasizing processing and properties of soft elastomeric materials. Crystal growth and purification. Thin film technolo- gy. Application of chemical processing to the man- factor of semiconductors and solid-state devices. (SP)

182. Processing of Advanced Polymeric Materials. (3) Three hours of lecture per week. Prerequisites: 150A-150B or equivalents; 178 or equivalent recom- mended. Study of polymer rheology and polymer processing operations, including extrusion, calendaring, fiber and film formation, compression and injection molding, and mixing. Process analysis utilizes an under- standing of rheology, fluid mechanics, and heat transfer to determine operating characteristics and the selection of apparatus and equipment for processing operations. (SP)

185. Technical Communication for Chemical En- gineers. (3) Course may be repeated for credit with consent of instructor. Three hours of lecture per week. Prerequisites: 140; Satisfactory completion of UC Sub- ject A requirement; Satisfaction of Chemical Engi- neering English composition requirement and satis- factory language skills as judged by instructor. Development of technical writing and oral presentation skills commonly used by chemical engi- neers. (F,SP)

H194. Research for Advanced Undergraduates. (2- 3) Course may be repeated for credit. Individual con- ferences. Prerequisites: Honors and senior standing; a minimum GPA of 3.4 overall at Berkeley. Original re- search on a topic under direction of one of the members of the staff. (F,SP)

195. Special Topics. (2-3) Course may be repeated for credit. Individual conferences. Prerequisites: Con- cent of instructor. Lectures and/or tutorial instruction on special topics. (F,SP)

196. Special Laboratory Study. (2-3) Course may be repeated for credit. Individual conferences. Prerequi- sites: Senior standing and consent of instructor. Spe- cial laboratory or computational work under direction of one of the members of the staff. (F,SP)

198. Directed Group Study for Undergraduates. (1- 3) Course may be repeated for credit. One hour of lec- ture and one hour of discussion per week. Prerequisites: 140 satisfied by successful 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 in the General Catalog.

Graduate Courses

230. Mathematical Methods in Chemical Engi- neering. (3) Three hours of lecture per week. Prerequi- sites: 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, chemistry, ther- modynamics, and reaction kinetics employing ordinary and partial differential equations, variational calculus, and Fourier methods. (F)

232. Computational Methods in Chemical Engi- neering. (3) Three hours of lecture per week. Pre- requisites: Math 53 and 54 or equivalent; open to senio- rors with consent of instructor. Introduction to modern computational methods for treatment of problems not amenable to analytic solutions. Application of numerical techniques to chemical engineering calculations with emphasis on computer methods.

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.
Topics covered include classical thermodynamics of pure substances and mixtures, interfacial thermodynamics, statistical mechanics, and computer simulations. (F)

241. Molecular Thermodynamics for Phase Equilibria in Chemical Engineering. (2) Two hours of lecture per week. Prerequisites: C55 or equivalent. Grad-}

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 activity patterns in catalysis; surface chemistry, catalytic mechanisms and modern experimental techniques in catalytic research; descriptive examples of industrial catalytic systems. (SP)

246. Principles of Electrochemical Engineering. (3) Three hours of lecture per week. Prerequisites: Graduate standing or 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)

247. Reactor Engineering. (3) Three hours of lecture per week. Prerequisites: 244 or equivalent. Reactor design oriented toward different topics. (F,SP)

248. Applied Surface and Colloid Chemistry. (3) Three hours of lecture per week. Prerequisites: Graduate standing or consent of instructor. Electrode processes in electrolysis and in galvanic cells. Charge and mass transfer in ionic media. Criteria of scale-up.

249. Biochemical Engineering. (3) Three hours of lecture per week. Prerequisites: 150A-150B; Molecular and Cell Biology 102; Chemistry 112B, 120B; 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 large scale biochemical products.

250. Transport Processes. (3) Three hours of lecture per week. Prerequisites: 150A, 150B, and 230, or equivalent; open to seniors with consent of the instructor. Basic differential relations of mass, heat, and momentum for non-Newtonian and non-Newtonian fluids; exact solutions of Navi-Stokes equations; scaling and singular perturbations; creeping flow; laminar boundary layers; turbulence; hydrodynamic stability. (SP)

251. Mass Transfer and Separations. (3) Three hours of lecture per week. Prerequisites: 250, or equivalent. Frames of reference in diffusion, concentrations, and velocities in mixtures, fluxes, and forces. Diffusion coefficients, multi-component diffusion, and heat transfer. Mass transfer at a phase boundary. High rates of mass transfer; mass transfer and chemical reaction. Comparison, evaluation, and selection of methods for enhancing separation of mixtures. Approaches for selectivity and capacity, reducing energy consumption, and adapting process configurations to separations needs. (F)

255. Electrochemical, Hydrodynamic, and Interfacial Phenomena. (2) Course may be repeated for credit. Prerequisites: Open to properly qualified graduate students. (F,SP)

295N. Polymer Physics. (3) Three hours of lecture per week. Prerequisites: 290 and 240. This course, which is based on Gert Strobl’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, morphological properties of polymer systems, 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 be taught in the form of seminar, and theoretical studies. (F,SP)

295R. Applied Spectroscopy. (3) Three hours of lecture per week. Prerequisites: Graduate standing or consent of instructor. Students will participate in solving open-ended technical 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 a capstone experience for a student who is expected to have completed a new engineer in industry, (2) of the viewpoint of management, and (3) of the skills needed for success. (SP)

295S. Introduction to Experimental Surface Chemistry. (3) Prerequisites: 240 or equivalent. This course is intended to introduce chemical engineering students to 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; growth of thin films, catalytic and electronic properties. (F)

295T. Development of Biopharmaceuticals. (2) This course will present the process of taking a discovered biological activity through steps leading to a pharmaceutical product fit for marketing to the public. Students will gain an understanding of product development in a modern biotechnology company. This course will focus on chemicals produced by biotechnology and from human blood plasma. (SP)

295K. Current Topics in Metabolic Engineering. (1) One hour of lecture per week. Prerequisites: 170 or equivalent, Molecular and Cell Biology 102 or equivalent, or consent of instructor. This course will survey recent advances in metabolic engineering, including the recent literature in this area. Topics of interest include flux analysis, recombinant gene expression, and metabolic engineering of physiology, and microbial and mammalian secondary metabolites. Students will be expected to read and interpret the recent literature. A working knowledge of molecular biology is necessary. (F,SP)

296. Special Study for Graduate Students in Chemical Engineering. (1-6) Course may be repeated for credit. Individual conferences. Sections 1-4 to be graded on a letter-grade basis. Prerequisites: Consent of instructor. Research. (F,SP)

298. Seminar in Chemical Engineering. (1-3) Course may be repeated for credit. Two hours of seminar per week. Must be taken on a satisfactory/unsatisfactory basis. Prerequisites: Open to properly qualified graduate students with consent of instructor. Lectures and directed toward different topics. (F,SP)

299. Research in Chemical Engineering. (1-12) Course may be repeated for credit. Individual conferences. Sections 1-29 to be graded on a satisfactory/unsatisfactory basis; sections 30 to be graded on a letter-grade basis. Prerequisites: Consent of instructor. Research. (F,SP)

602. Individual Studies for Graduate Students. (1-8) Consents, course may be repeated for credit. Individual study in consultation with the major field adviser for qualified students to prepare themselves for the various examinations required of candidates for the Ph.D. (F,SP)
pharmacology, and bioengineering. The B.S. degree in chemical engineering is intended as preparation for a career in chemical engineering and related disciplines. Chemical engineering majors may specialize in one of five options: applied physical sciences, biotechnology, chemical processing, environmental technology, or materials science and technology. Also, two B.S. degree double major programs (Chemical Engineering and Materials Science, Chemical Engineering, and Chemical Engineering and Nuclear Engineering) are available.

The College of Letters and Science offers a chemistry major leading to a B.A. degree through a curriculum with a greater proportion of courses in the humanities and social sciences than is included in the B.S. chemistry program. It is intended for students interested in careers in teaching, medicine, or other sciences in which a basic understanding of chemical processes is necessary.

Advanced undergraduate and graduate students have opportunities to conduct research in synthetic and structural chemistry of organic and inorganic compounds, chemistry of natural products, theoretical chemistry, nuclear chemistry, physical chemistry, biophysical chemistry, solid-state and surface chemistry, catalysis, process design and control, polymers, materials processing (including electronic materials), food processing, and biochemical engineering.

Recommended high school preparation for chemistry, chemical biology, or chemical engineering should include chemistry (one year); physics (one year); mathematics (four years, including trigonometry, intermediate algebra, and analytic geometry); and a foreign language (two or three years, preferably German, Russian, or French).

For a more specific description of the programs for the various degrees, as well as options of specialization, see the Announcement of the College of Chemistry.

Organizational Units

Chemical Engineering
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Chair: Arup K. Chakraborty, Ph.D.

Chemistry
Department Office: 419 Latimer Hall #1460, 642-5882
Chair: Charles B. Harris, Ph.D.

Chemistry (Department of)

(College of Chemistry)

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http://chem.berkeley.edu
Chair: Charles B. Harris, Ph.D.

University Professors

Gerald A. Somorjai, Ph.D. University of California, Berkeley. Physical chemistry
Yuan T. Lee (Emeritus), Ph.D. University of California, Berkeley. Physical chemistry

Professors

A. Paul Alivisatos, Ph.D. University of California, Berkeley. Physical chemistry
John Arnold, Ph.D. University of California, San Diego. Inorganic chemistry
Peter Bartlett, Ph.D. Harvard University. Organic chemistry
Robert G. Bergman, Ph.D. University of Wisconsin. Organometallic chemistry
Chad D. Breitzke, Ph.D. University of California, Berkeley. Chemical biology
Joseph Cerny, Ph.D. University of California, Berkeley. Nuclear chemistry
Arup K. Chakraborty, Ph.D. University of Delaware. Chemical engineering

David Chandler, Ph.D. Harvard University. Theoretical chemistry
Jennifer Donahue, Ph.D. Harvard University. Chemical biology
Jonathan A. Elman, Ph.D. Harvard University. Organic chemistry
Graham R. Fleming, Ph.D. University of London. Physical chemistry
Jean M. J. Fréchet, Ph.D. State University of New York. Polymer chemistry
Charles B. Harris (Chair), Ph.D. Massachusetts Institute of Technology. Physical chemistry
Martin Head-Gordon, University of -Mellan. Theoretical chemistry
Sung-Hou Kim, Ph.D. University of Pittsburgh. Chemical biology
Jack R. Kirsch, Ph.D. Rockefeller University. Chemical biology
Judith F. Kliman, Ph.D. University of Pennsylvania. Chemical biology
John Kuriyan, Ph.D. Massachusetts Institute of Technology. Physical biology
Stephen R. Leone, Ph.D. University of California, Berkeley. Physical chemistry
William A. Lester, Jr., Ph.D. The Catholic University of America. Theoretical chemistry
Marion M. Mage (Vice Chair), Ph.D. Southern Illinois University. Electrophysics
Michael A. Martens, Ph.D. University of California, San Francisco. Chemical biology
Richard A. Mathies, Ph.D. Cornell University. Chemical biology
William H. Miller, Ph.D. Harvard University. Theoretical chemistry
Luciano G. Moreto, Ph.D. University of Pavia. Nuclear chemistry
Daniel M. Neumann, Ph.D. University of California, Berkeley. Physical chemistry
Heino Nitsche, Ph.D. Freie Universität Berlin. Nuclear chemistry
Alexander Pines, Ph.D. Massachusetts Institute of Technology. Physical chemistry
Kenneth N. Raymond, Ph.D. University of Washington. Physical, Inorganic, and biophysical chemistry
Richard J. Saykally (Emeritus), University of Wisconsin-Madison. Physical chemistry
Charles V. Shank, Ph.D. University of California, Berkeley. Physical chemistry
Keon Shokat, Ph.D. University of California, Berkeley. Chemical biology
Angela M. Stacy (Vice Chair), Ph.D. Cornell University. Inorganic and physical chemistry
T. Don Tilley, Ph.D. University of California, Berkeley. Inorganic chemistry
K. Peter C. Vollhardt, Ph.D. University College London. Organic chemistry
David E. Wemmer, Ph.D. University of California, Berkeley. Chemical biology
K. Brietta Whaley, Ph.D. University of Chicago. Theoretical chemistry
Evan R. Williams, Ph.D. Harvard University. Analytical chemistry
Richard A. Andersen (Emeritus), Ph.D. University of Wyoming. Inorganic chemistry
Net Barnett (Emeritus), Ph.D. King’s College, University of Durham. Inorganic chemistry
Lea Brewer (Emeritus), Ph.D. University of California, Berkeley. Physical chemistry
Robert E. Connick (Emeritus), Ph.D. University of California, Berkeley. Physical inorganic chemistry
Robert A. Harris (Emeritus), Ph.D. University of Chicago. Theoretical chemistry
John E. Hearst (Emeritus), Ph.D. California Institute of Technology. Chemical biology
Clayton H. Heard, Ph.D. University of Colorado. Physical organic chemistry
Darlene G. Hoffman (Emeritus), Ph.D. Iowa State University. Nuclear chemistry
Hagood S. Johnston (Emeritus), Ph.D. Drexel University. Physical chemistry
William L. Jolly (Emeritus), Ph.D. University of California, Berkeley. Inorganic chemistry
Samuel S. Markowitz (Emeritus), Ph.D. Princeton University. Nuclear chemistry
C. Bradley Moore (Emeritus), Ph.D. University of California, Berkeley. Physical chemistry
Rollie J. Myers (Emeritus), Ph.D. University of California, Berkeley. Physical chemistry
Chester T. O’Konski (Emeritus), Ph.D. Northwestern University. Physical chemistry
Norman E. Phillips (Emeritus), Ph.D. University of Chicago. Physical chemistry
John O. Ramsey (Emeritus), Ph.D. University of California, Berkeley. Nuclear and theoretical chemistry
Kenneth Sauers (Emeritus), Ph.D. Harvard University. Chemical biology
David A. Shirley (Emeritus), Ph.D. University of California, Berkeley. Physical chemistry
Herbert L. Strauss (Emeritus), Ph.D. Columbia University. Physical chemistry
Andrew Streitwieser, Jr. (Emeritus), Ph.D. Columbia University. Physical chemistry
David H. Templeton (Emeritus), Ph.D. University of California, Berkeley. Physical chemistry
Ignacio Tinoco (Emeritus), Ph.D. University of Wisconsin. Chemical biology

Associate Professors

Ronald C. Cohn, Ph.D. University of California, Berkeley. Atmospheric chemistry
Jeremy R. Long, Ph.D. Harvard University. Inorganic chemistry
Peyding Yang, Ph.D. Harvard University. Inorganic chemistry

Assistant Professors

Kristie A. Boening, Ph.D. Stanford University. Atmospheric chemistry
Jamie Doudna Cate, Ph.D. Yale University. Chemical biology
Christopher J. Chang, Ph.D. Massachusetts Institute of Technology. Bioorganic, inorganic, and organic chemistry
Matthew Francis, Ph.D. Harvard University. Organic chemistry
Phillip Geissler, Ph.D. University of California, Berkeley. Theoretical chemistry
Jay T. Groves, Ph.D. Stanford University. Chemical biology
Richard Sarpela, Ph.D. Princeton University. Organic and organometallic chemistry
F. Dean Toste, Ph.D. Stanford University. Organic chemistry
Dirk Trauner, Ph.D. University of Vienna. Organic chemistry
Haw Yang, Ph.D. University of California, Berkeley. Physical chemistry

Adjunct Professor

C. William McCurdy, Ph.D. California Institute of Technology. Theoretical chemistry

Lecturers

Michelle Doukey, Ph.D. University of Minnesota. Catalysis, organometallic chemistry
Ahaminda Jain, Ph.D. Harvard University. Organic chemistry
Mark Kubinec, Ph.D. University of California, Berkeley. Physical chemistry and NMR
Kimberly Lavoie, Ph.D. University of California, Berkeley. Organic chemistry
Steven F. Pedersen, Ph.D. Massachusetts Institute of Technology. Inorganic and organic chemistry

Chemistry Major in the College of Chemistry (B.S. Degree)

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. These courses permit the student to emphasize chemistry in areas of personal interest or to specialize in some related field, such as physics, biology, geology, mathematics, materials science, nuclear science; or to complete premedical requirements. 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: Entry-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 or equivalent), 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 120 semester units; Mathematics 1A, 1B, 53, 54; Physics 7A, 7B (88 may be taken in place of 7A, 7B, but 7A, 7B are recommended); Biology 1A or 1B; Chemistry 4A, 4B, 103, 112A, 112B, 120A, 120B, 135, and one of 105, 125, 127L, or 182; Molecular and Cell Biology 110, 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 15 units in English composition (English R1A and R1B or equivalent), humanities, and social sciences to fulfill the breadth requirement. See the Announcement...
Undergraduate Research

Students are encouraged to take individual undergraduate research 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), and English 1A-1B before transfer. In addition, completion of additional courses in mechanics, calculus-based physics, and some biology is encouraged. Chemistry and chemical biology majors who transfer without having covered quantitative analysis are required to take chemistry 5 after transfer. Please note that course work taken the summer before enrollment at Berkeley is not considered in the selection of applicants.

Chemistry Major in the College of Letters and Science (B.A. Degree)

Mathematics: 1A, 1B, 53, 54, Physics: 7A, 7B. Chemistry: 4A, 4B (or 1A, 1B, and 5); 104A, 104B (103 and 135 may be taken in place of 104A, 104B), 112A, 112B, 120A, 120B, and a choice of one of the following: 105, 108, 115, 125, C170L, C182.

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 qualify, prospective 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; (2) complete at least 1 unit of Chemistry H194 or another advanced chemistry course as 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-3B or 112A-112B or equivalent), one year of physical chemistry taken at Berkeley (120A-120B or 130A-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 must achieve at least a 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 at another institution and accepted by the College of Chemistry as equivalent to 3A, 3B, 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 rules regarding overlap of courses between majors and minors.

California Teaching Credential

For information concerning the California Teaching credential (Single or Multiple Subject), 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 website at http://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, 3A, 3B, 4A, 4B, 5, 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. Prerequisites: 1A or score of 2 on Chemistry AP exam; 4A or minimum grade of C in 1A or 3A. Chemical Structure and Reactivity. (3) Laboratory section must be taken concurrently with lecture. Stoichiometry, ideal and real gases, acid-base and solubility equilibria, oxidation-reduction reactions, thermodynamics, introduction to thermodynamics, nuclear chemistry, radioactivity, the atoms and elements, and the periodic table. Laboratory sections focusing on environmental chemistry are available. See Schedule of Classes for details. (F,SP)

1B. General Chemistry. (4) Courses 3A and 4B will restrict credit if completed before 1B. Two hours of lecture, one hour of discussion, and four hours of laboratory per week. Prerequisites: 1A or a score of 3.4, or 5 on the Chemistry AP test. Chemical bonding, molecular structure, introduction to infrared spectroscopy and mass spectrometry will be used to analyze products prepared and/or isolated. Qualitative and quantitative instrumental methods will be introduced. (F,SP)

3A. Chemical Structure and Reactivity. (3) Courses 1B, 4B, and 112A will restrict credit if completed before 3A. Three hours of lecture per week. Prerequisites: 1A with a grade of C- or higher, or a score of 4 or 5 on the Chemistry AP test. Chemistry 1B must be taken concurrently. Introduction to organic chemical structures, bonding, and chemical reactivity. The organic chemistry of aldehydes, ketones, carboxylic acids, amino acids, peptides, proteins, and nucleic acids. Introduction to organic spectroscopy and mass spectrometry. (F,SP)

3B. Chemical Structure and Reactivity. (3) Course 112A will restrict credit if completed before 3AL. One hour of lecture and four hours of laboratory per week. Introduction to the theory and practice of methods used in the organic chemistry laboratory. An emphasis is placed on the separation and purification of organic compounds. Techniques covered will include extraction, distillation, sublimation, recrystallization, and chromatography. Detailed discussions and applications of infrared and nuclear magnetic resonance spectroscopy will be included. (F,SP)

3B. Chemical Structure and Reactivity. (3) Course 112A will restrict credit if completed before 3AL. Three hours of lecture per week. Prerequisites: 3A with a grade of C- or higher. Conjugation, aromatic chemistry, carbonyl compounds, carbohydrates, amines, carboxylic acids, amino acids, peptides, proteins, and nucleic acid chemistry. Ultraviolet spectroscopy and mass spectrometry will be introduced. (F,SP)

3BL. Organic Chemistry Laboratory. (2) One hour of lecture and four hours of laboratory per week. Prerequisites: 3A or 112A. Chemical Structure and Reactivity. (3) Course 112B will restrict credit if completed before 3BL. Three hours of lecture per week. Prerequisites: 3A with a grade of C- or higher. Conjugation, aromatic chemistry, carbonyl compounds, carbohydrates, amines, carboxylic acids, amino acids, peptides, proteins, and nucleic acid chemistry. Ultraviolet spectroscopy and mass spectrometry will be introduced. (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. 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 fundamental principles of chemistry, including stoichiometry, ideal and real gases, acid-base and solubility equilibria, oxidation-reduction reactions, thermodynamics, entropy, nuclear chemistry and radioactivity, the atomic model, 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 computational chemistry and biochemistry. Laboratory emphasizes quantitative work. Equivalent to 1A-1B plus 5 as prerequisite for further courses in chemistry. (F)

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: 1A or score of 5 on Chemistry AP exam; 1B or 3A recommended. Three hours of lecture and four hours of laboratory per week. Prerequisites: 1B or score of 3.4, 5 on Chemistry AP exam; 3A or 112A. Acid-base, redox, complex formation equilibria and their applications to volumetric analytical methods. Principles and applications of spectrophotometry, potentiometry, coulometry, polarography, and ion exchange chromatography. Selected additional topics in instrumental analysis. (SP)

10. Chemical Attraction. (3) For nonscience majors. Three hours of lecture and one hour of discussion per week. The principles of chemistry permeate everything 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 foods and pharmaceuticals we ingest, 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. 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/nd 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 and semester to semester. Enrollment limited to 15 freshmen.

49. Supplementary Work in Lower Division Chemistry. (1-4) Course may be repeated for credit. Meetings are arranged. Students with partial credit in lower division chemistry courses may, with consent of instructor, complete the credit under this heading. (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 fourteen weeks. One and one half hours of seminar per week per unit for fifteen 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 faculty members in departments all across the campus. Sophomore seminars offer opportunity for
101. Organic Chemistry, (2) Four hours of lecture per week. Prerequisites: Mathematics 53, 54 or Physical Chemistry 112A or 112B may be taken concurrently. Three hours of laboratory per week. 112A: 1B or 4B with grade of C- or higher; 112B: 1B or 4B with grade of C- or higher. This course is divided into three sections. 112A (F); 112B (SP) 112A-112B. Organic Chemistry. (5;5) Courses 3A-3B will restrict credit if completed prior to 112A-112B. Three hours of lecture, one hour of laboratory lecture per week. Prerequisites: 4B or 5; 104A with grade of C- or higher; and 104B (may be taken concurrently). Three hours of laboratory per week. Prerequisites: 112A or 112B. Topics include: reaction mechanisms, multistep syntheses. 112A (F); 112B (SP) 113. Advanced Mechanistic Organic Chemistry. (3) Three hours of lecture per week. Prerequisites: 3B or 112B with a minimum grade of B- or consent of instructor. Advanced topics in mechanistic and physical organic chemistry with a focus on selectivity. Topics include reactions of non-stabilized anions, olefination, pericyclic reactions, and reaction mechanisms. 114. Advanced Synthetic Organic Chemistry. (3) Three hours of lecture per week. Prerequisites: 3B or 112B with a minimum grade of B- or consent of instructor. Advanced topics in synthetic organic chemistry with a focus on selectivity. Topics include reaction, intermediates, substitution reactions, free energy relationships, orbital interactions and orbital symmetry control of reactions, isotope effects, and photochemistry. (SP) 115. Organic Chemistry—Advanced Laboratory Methods. (4) Four hours of laboratory per week. Prerequisites: 1B or 4B with grade of C- or higher. Advanced synthetic methods, chemical and spectroscopic structural methods, designed as competition for experimental research. 120A. Physical Chemistry. (3) Three hours of lecture per week. Prerequisites: 4B or equivalent; Mathematics 53, 54; Physics 7B or 8B; (may be taken concurrently). Physical chemistry concepts, including kinetic, potential, and total energy of particles and forces between them; principles of quantum theory, including one-electron and many-electron atoms. The course will be divided (fall semester) into a section for chemistry majors and one for chemical biology majors, both meeting at the same time, covering topics of interest to each group relating to molecules and chemical bonding, electrical properties, intermolecular interactions and spectroscopy. (F,SP) 120B. Physical Chemistry. (3) Three hours of lecture per week. Prerequisites: 4B or equivalent; Mathematics 53, 54; Physics 7B or 8B; (may be taken concurrently). Statistical mechanics, thermodynamics, and equilibrium. The course will be divided (spring semester) into a section for chemistry majors and one for chemical biology majors, both meeting at the same time, covering topics of interest to each group relating to states of matter, solutions and solvation, (bio)chemical kinetics, molecular dynamics and characterization, and transport of molecules. (F,SP) 122. Quantum Mechanics and Spectroscopy. (3) Three hours of lectures per week. Prerequisites: 120A. Postulates and methods of quantum mechanics and group theory applied to molecular structure and spectros. (F) 125. Physical Chemistry Laboratory, (3) Consent of instructor is needed if taken after C162 or Earth and Planetary Science C182. One hour of lecture and five hours of laboratory per week. Prerequisites: Needs two of the following: 120A, 120B, or both 120A and 120B, or grades of C- or higher (one of which may be taken concurrently). Experiments in thermodynamics, kinetics, molecular structure, and general physical chemistry. (F,SP) 130A. Biophysical Chemistry. (3) Course 120B will restrict credit if completed prior to C130A or Molecular and Cell Biology C100A. Three hours of lecture and one hour of discussion per week. Prerequisites: 3A or 120A and Mathematics 1A, Biology 1A; 4A; 143 recommended. Thermodynamic and kinetic concepts applied to understanding the chemistry and structure of biomolecules (proteins, DNA, and RNA). Molecular distribution, reaction kinetics, enzyme kinetics, biosensors, energy transport, 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 130B. Two hours of lecture and one hour of discussion per week. Prerequisites: 1B or 4B or 3A, and at least one semester course in calculus. Intended for students majoring in the biological sciences. The weekly one-hour discussion is for problem solving and the application of calculus in physical chemistry. Bioenergetics, equilibrium and non-equilibrium states, molecular distributions, active transport, and passive transport, reaction rates and mechanisms, enzyme reactions. (F,SP) 135. Chemical Biology. (3) Three hours of lecture per week. Prerequisites: 3B or 112B; 120A (may be taken concurrently); or consent of instructor. Introduction to biotechnology, aimed toward chemistry majors. (F,SP) 143. Nuclear Chemistry. (2) Two hours of lecture per week. Prerequisites: Physics 7B or equivalent. Radioactivity, nuclear 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 equivalent; 143 recommended. Experimental and theoretical illustrations of the interaction between chemical and nuclear science and technology; fission process, chemistry of fission fragments, chemical effects of nuclear transformation; application of radioactivity to study of chemical problems; neutron activation analysis. (SP) C170L. Biochemical Engineering Laboratory. (3) Six hours of laboratory and one hour of lecture per week. Prerequisites: Chemical Engineering 170 or 179E (may be taken concurrently) or consent of instructor. Laboratory techniques for the cultivation of microorganisms in batch and continuous reactions. Enzymatic conversion processes. Recovery of biological products. Also listed as Chemical Engineering C170L. (SP) C178. Polymer Science and Technology. (3) Three hours of lecture/laboratory per week. Prerequisites: One semester organic chemistry and physics recommended; Chemical Engineering 150A, equivalent fluid mechanics, or consent of instructor. Concepts of the physical and chemical behavior of organic polymers. Properties of solutions, melts, glasses, elastomers, and crystals. Engineering applications emphasizing processing techniques. Experiments in polymerization and
characterization. Also listed as Chemical Engineering C178. (SP)

C182. Atmospheric Chemistry and Physics Laboratory. (3) Consent of instructor is needed if taken after 125. One hour of lecture and five hours of laboratory per week. Prerequisites: College-level calculus, chemistry, 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, and for chemistry, physics, astronomy, biology, and engineering majors whose interests may lie in the study of the atmosphere of Earth and other planets. Also listed as Earth and Planetary Science C182. (SP)

C191. Quantum Information Science and Technology. (3) Three hours of lecture/discussion per week. Course may be repeated for credit. Three hours of lecture per week. Prerequisites: 200 or 201 or consent of instructor and background in chemistry, solvent and substituent effects. (F)

200. Structure Analysis by X-Ray Diffraction. (4) Two hours of lecture and eight hours of laboratory per week. Prerequisites: Consent of instructor. The theory and practice of modern, single-crystal X-ray diffraction. Groups of four students determine the crystal and molecular structure 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 technique; collection of intensity data by automated diffractometry procedures and structure analysis and refinement. (SP)

220A. 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 the application to real systems. (SP)

220B. Statistical Mechanics. (3) Three hours of lecture per week. Prerequisites: 220A. Principles of statistical mechanics and applications to complex systems. (F)

221A. Advanced Quantum Mechanics. (3) Three hours of lecture per week. Prerequisites: 120B and 122 or equivalent. Introduction, one dimensional problems, matrix mechanics, approximation methods. (F)

221B. 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. (SP)

223A. Chemical Kinetics. (3) Three hours of lecture per week. Prerequisites: 221A (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)

230. Protein Chemistry, Enzymology, and Bio-organic 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; DNA catalysis; protein-protein and protein-nucleic acid interactions; enzyme kinetics and mechanism; catalytic antibodies. Intended for graduate students in chemistry, biochemistry, and molecular and cell biology. Also listed as Molecular and Cell Biology C214. (SP)

243. 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)

250A. 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)

250B. Inorganic Spectroscopy. (3) 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)

251A. Coordination Chemistry I. (1) Three hours of lecture per week for five weeks. Prerequisites: 250A or consent of instructor. Upper-level chemistry major and knowledge of quantum mechanics, and the reactions of the d-transition metals and their compounds. (F)

251B. Coordination Chemistry II. (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)

252A. 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. (SP)

252B. 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)

253A. 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)

253B. 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 as well as a survey of important physical phenomena including optical, electrical, and magnetic properties. (SP)

253C. 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

254. Bio-inorganic Chemistry. (1) Three hours of lecture per week for five weeks. Prerequisites: 200 and/or consent of instructor. Introduction to biochemistry and enzyme catalysis. (SP)

255. Advanced Analytical Chemistry I. (3) Three hours of lecture per week. Prerequisites: Graduate standing or consent of instructor. Formerly 250. State-of-the-art techniques in modern analytical chemistry will be presented in areas including mass spectrometry, electrochemistry, and separations. Emphasis will be on instrumentation, methods, detection, and recent applications. (SP)

256. Electrochemical Methods. (3) 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. (SP)

260A. Reaction Mechanisms I. (1) Three hours of lecture per week for five weeks. Prerequisites: 200 or 201 or consent of instructor. Thermochemistry, acidity, bond energies, mechanistic analysis, MO theory and aromaticity, kinetics and isotope effects. (F)

260B. Reaction Mechanisms II. (1) Three hours of lecture per week for five weeks. Prerequisites: 260A or consent of instructor. Intermediate, photochemistry, solvent and substituent effects. (F)

261A. 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)

261B. 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)

261C. 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 pericyclic reactions such as cycloadditions, electrolyclications, and sigmatropic rearrangements. (SP)

262. 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 surveyed. Specific 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. Underlying theory behind practical nuclear magnetic resonance spectroscopy and a survey of its applications to chemical research. (SP)

266. Mass Spectrometry. (1) Three hours of lecture per week for five weeks. Prerequisites: 200 or 201 or consent of instructor. Basic mass spectrometric ionization techniques, data analysis, and fingerprinting of mass spectra of organics, inorganics, and biopolymers. (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, combinatorial chemistry, natural products chemistry, etc. (SP)

270A. Advanced Biophysical Chemistry I. (1) Three hours of lecture per week for five weeks. Prerequisites: 200 or consent of instructor. Underlying principles and applications of methods for biophysical analysis of biological macromolecules. (F,SP)

270B. Advanced Biophysical Chemistry II. (1) Three hours of lecture per week for five 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 purification 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: 200 or consent of instructor. This course will focus on the principles of enzyme catalysis. The course will begin with an introduction to the general concepts of enzyme catalysis which will be followed by specific examples and 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: 271B or consent of instructor. This course will build on the principles discussed in Chemical Biology I and II. The focus will consist of case studies where rigorous chemical approaches have been brought to bear on biological questions. Potential subject areas will include signal transduction, photosynthesis, immunology, virology, and cancer. For each topic, the appropriate bianalytical techniques will be emphasized. (SP)

272A. Bio X-Ray I. (1) Three hours of lecture per week for five weeks. Prerequisites: 270A-270B or consent of instructor. More sophisticated aspects of the 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. 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)

273A. Bio NMR I. (1) Three hours of lecture per week for five weeks. Prerequisites: 273A. Triple resonance methods for protein and nucleic acid resolution 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. (SP)

273B. Bio NMR II. (1) Three hours of lecture per week for five weeks. Prerequisites: 273A. Techniques for analyzing organic and inorganic samples, along with an opportunity to be trained and check out the instruments. Concepts mass spectrometry, in-depth instruction on the use of mass spectrometry for the analysis of biomolecules such as proteins, peptides, carbohydrates, and nucleic acids. (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. Undergraduate students may petition the Department Chair to offer a special topic course. Interested undergraduates may petition the Department Chair to offer a special topic course. (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
(John and Constance Danforth Professor of American Studies)

Program Office: 506 Barrows Hall, (510) 643-0796
Chair: To be announced
Professors
Norma Alarcón, Ph.D.
Beatriz Manz, Ph.D.
Jose D. Saldivar, Ph.D.
Mario Barrera (Emeritus), Ph.D.
Carlos Muñoz, Jr. (Emeritus), Ph.D.
David Montejano, Ph.D.
José D. Saldívar, Ph.D.
Norma Alarcón, Ph.D.
Chair: To be announced
Program Office: 506 Barrows Hall, (510) 643-0796

†Recipient of Distinguished Teaching Award

Chicano Studies (College of Letters and Science)

Program Office: 506 Barrows Hall, (510) 643-0796
Chair: To be announced
Professors
Norma Alarcón, Ph.D.
Beatriz Manz, Ph.D.
Jose D. Saldivar, Ph.D.
Mario Barrera (Emeritus), Ph.D.
Carlos Muñoz, Jr. (Emeritus), Ph.D.
David Montejano, Ph.D.
José D. Saldívar, Ph.D.
Norma Alarcón, Ph.D.
Chair: To be announced
Program Office: 506 Barrows Hall, (510) 643-0796

†Recipient of Distinguished Teaching Award

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 American society and institutions. Moreover, in light of 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. This includes an examination of the interrelationships in the historical background, cultural patterns, and artistic expression of the Chicano community in order to acquire a well-rounded, in-depth understanding of the contemporary in-
terface between Chicanos 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

The major in Chicano studies consists of 12 courses for a total of 48 units.

Lower Division. Ethnic Studies 10A, 10B; completion of two courses from Chicano Studies 20, 40, and 50.

Upper Division. Ethnic Studies 101A, 101B, and 103; completion of four courses from Chicano Studies 101, 143, 150B, 159, C161, or an approved course from another department; Chicano Studies 197 (4 units cumulative).

Honors Program. The Chicano Studies program provides an option leading to the A.B. degree with honors. Students must have junior standing; a 3.3 University GPA; and a 3.3 GPA in the major. The honors thesis consists of a 6-unit research project. The faculty advisor and the project advisor must assign the grade for the thesis. (SP) Staff

Requirements. The minor in Chicano studies consists of five upper division courses for a total of 20 units: Ethnic Studies 101A or 101B; and completion of four of the upper division courses listed in the major requirements (not including Chicano Studies 197).

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 class discussions, weekly compositions, individual and group presentations, lectures, movies and selected readings. Newly acquired confidence in and facility with the Spanish language will be continually reinforced through class presentation, written and oral reports on assigned topics. (F) Saragoza

6B. Chicano Spanish. (4) Four hours of lecture per week. Prerequisites: 6A. To expand on 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 interactions of Chicanos 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) Staff

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. 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 designed to help freshmen find their place 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 modern Chicano literature written in English, and will delve into the politics and culture of Chicano culture. This course will be structured for students to understand the core concepts of Chicano literature and for students to understand the special issues confronting Chicano students. (SP) Perez

50. Introduction to Chicano History. (3) Three hours of lecture per week. A general overview of the Chicano cultural experience in the United States. (F) Saragoza

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 compares and contrasts the ideologies, political organizations, and political leadership in the Mexican American, Cuban American, Puerto Rican, and Central American communities. The controversy issues confronting Latinos are critically examined. (F) Staff

84. Sophomore Seminar. (1,2) Course may be repeated for credit as topic varies. One hour of seminar per week for fifteen weeks. One and 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 across the campus. Sophomore seminars offer opportunity to 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)

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. Supervised independent field study in the community relevant to specific aspects of Chicano studies. (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 work per week per unit. Must be taken on a passed/not passed basis. Prerequisites: Consent of instructor. Open to freshmen and sophomores only. Supervised independent field study in the community relevant to specific aspects of Chicano studies. (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. Open to freshmen and sophomores only. Supervised independent study and research. (F,SP) Staff

Upper Division Courses

101. Paradigms in Chicano Studies. (4) Three hours of lecture and one hour of discussion per week. Prerequisites: Majors and minors only. A critical assessment of paradigms and intellectual traditions in Chicano Studies. (F,SP)

130. Mexican and Chicano Art History. (3) Three hours of lecture per week. Formerly 30. A survey of Mexican and Chicano art from pre-Columbian 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,SP)

133. Chicano Music. (4) Three hours of seminar per week. What is Chicano music? When did it begin? Who are considered Chicana musicans? How has Chicano music changed in relationship to the historical changes in the Chicano community? How has Chicano music helped shape the evolution of popular music and popular culture? How has Chicano music been a music accommodation and/or resistance? What role have Chicana artists/musicians played as cultural workers? Does Chicano music have a political agenda? How have Chicana 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 expectations will be accomplished through readings, research, guest lectures, performance, film, and listening to Chicano music. Classroom discussion will be the key ingredient to the success of this course. (SP) Saragoza

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 Chicana Writers and Chicana Feminist Discourse. (F,SP) Staff

142. Major Chicano Writers. (4) Three hours of lecture per week. Prerequisites: 40. Critical analysis of the works of major Chicano Playwrights, Poets and Fiction Writers. (F,SP) Staff

143. Chicano and Latin American Literature. (3) Three hours of lecture per week. Prerequisites: 40 recommended. A study of the relationships and parallel aspects between Latin American and Chicano literature. Emphasis on the literature of protest as a constant underlying current from the Conquest to the present. (F,SP) Staff

145. Contemporary Issues of Chicanas. (4) Three hours of lecture and one hour of discussion per week. Prerequisites: 50 required, 40 or 20 recommended. This course examines contemporary issues facing Chicanas in the U.S. The scope is historical-structural and examines political, and economic arrangements resulting in race, class and gender-based inequities. An individual and community scope examines the variations of: a) class, racial/ethnic and gender identity; b) social integration, and c) responses to structural barriers. (SP) Staff

146. Chicano/Latino Theatre Workshop. (5) Course may be repeated for credit. Four hours of lecture and two hours of laboratory per week. Prerequisites: Reading composition, or consent of instructor. Survey of Chicano/Latino Theatre from the 1960’s to the present. Topics will be selected from various aspects of theatre production with particular emphasis on playwriting and development. Plays will be studied within their social and historical context. (F,SP)

149. Creative Writing. (5) Three hours of lecture and three hours of workshop per week. Prerequisites: 40 and consent of instructor. The student enrolled will study intensively craft in Chicano literature, issues and problems encountered by Chicano writers and the role of the Chicano artist in society. The student will also practice writing in the genre of student’s choice. (F,SP)

150A. History of the Southwest: Spanish and Mexican Period. (4) Three hours of lecture per week. Prerequisites: 50 recommended. The role of people of Mexican descent in the Southwest from 1800 to 1880. (SP) Saragoza

150b. History of the Southwest: Mexican-United States War to Present. (4) Three hours of lecture per week. Prerequisites: 50 and/or 150A recommended. The relationship between people of Mexican descent and American society from 1880 to the present. (SP) Saragoza
159. Mexican Immigration, (4) Three hours of lecture per week. This course provides an overview of Mexican immigration to the United States. The relationship between immigration and Chicano community formation is examined. Issues and addressed include settlement patterns, socialization, educational aspiration, identity transformation, and historical changes. (F,SP)

161. Central American Peoples and Cultures, (4) Three hours of lecture per week. A comparative survey of the peoples and cultures of the countries of the Central American Isthmus from a historical and contemporary perspective. (F,SP) Manz

C161. 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 Geography 157. Manz.

172. Chicanos and the Educational System, (4) Three hours of lecture per week. Prerequisites: 70 recommended. 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)

174. Chicanos, Law, and Criminal Justice, (4) Three hours of lecture per week. Prerequisites: 70 recommended. Relationships between the courts and delivery system in the U.S. and 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)

176. Chicanos and Health Care, (3) Three hours of lecture per week. Prerequisites: 70 recommended. Relationships between the medical delivery system and the Chicano community. The role of the Chicano in the delivery of health care services. (F,SP).

179. Chicana/o Families, (4) Three hours of lecture and one hour of discussion per week. This course provides an overview of Chicana/o family structures, using historical, Chicano and feminist perspectives for 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)

180. Topics in Chicano Studies, (3) Course may be repeated for credit. Three hours of lecture per week. Prerequisites: Consent of instructor. Designed primarily to permit instructors to deal with topics with which they are especially concerned; usually more restricted than the subject matter of a regular lecture course. (F,SP)

195. Senior Thesis, (4) By arrangement. Prerequisites: Consent of instructor. Writing of a thesis under the direction of the member(s) of the faculty. (F,SP)

H195A-H195B. Honors Thesis, (3,3) Hours to be arranged. Credit and grade to be awarded on completion of sequence. Prerequisites: Junior standing; a 3.3 University GPA and a 3.3 GPA in the major. Independent study of a topic or the completion of an honor thesis under the supervision of a faculty member. (F,SP)

197. 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 the catalog. 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)

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 the catalog. Individual arrangements. Must be taken on a passed/not passed basis. Prerequisites: Upper division 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 #1850, (510) 642-3207 http://www-dcrp.ced.berkeley.edu/
Chair: Robert B. Cervero, Ph.D.
Professors
Nizar AlSayyad, Ph.D. University of California, Berkeley. Architecture and urban design
Peter Bosselmann, M.Arch. University of California, Los Angeles. Urbanization
Robert B. Cervero, M.C.P, Georgia Institute of Technology, Ph.D. University of California, Berkeley. Transportation planning, planning methods
Stephen S. Cohen, Ph.D. London School of Economics. Economic development
Elizabeth Deakin, M.S. Massachusetts Institute of Technology. Urban policy, transportation planning
David E. Dow, J.D., Ph.D. University of Colorado. Urban economics
Judith E. Innes, Ph.D. Massachusetts Institute of Technology. Social policy analysis

Instructors
John Landis, M.C.P., Ph.D. University of California, Berkeley. Housing, urban economics, public finance
Annal.ee Saxenian, M.C.P. University of California, Berkeley. M.C.P. Massachusetts Institute of Technology. Regional development, planning methodology (Information Systems and Management)
Michael Southworth, Ph.D., M.C.P. M.C.P. Massachusetts Institute of Technology. Urban design, environmental psychology, city planning
Martin Wachs, Ph.D. Northwestern University. Transportation policy
Edward Blakey (Emeritus), Ed.D. University of California, Los Angeles. Local economic development, rural development, biotechnology
Manuel Castells (Emeritus), LL.B., Ph.D. University of Paris. Urban sociology
Donald L. Foley (Emeritus), Ph.D. Washington University. Metropolitan regional development
Peter Hall (Emeritus), University of California, Los Angeles. Metropolitan planning
Ira Michael Herzov (Emeritus), LL.B. Yale Law School. Land use planning
Allan B. Jacobs (Emeritus), M.C.P. University of Pennsylvania. City planning and planning
Richard L. Meier (Emeritus), Ph.D. University of California, Los Angeles. Urban design and planning
Michael B. Teitz (Emeritus), Ph.D. University of Pennsylvania. Urban housing
Irene Tinker (Emeritus), Ph.D. London School of Economics. Development planning, women in planning
Francis Voich (Emeritus), B.S. University of California, Berkeley. Land use planning
Melvin M. Webber (Emeritus), M.C.P. University of California, Berkeley. Planning theory, social programs

Associate Professors
Karen Christensen, Ph.D. University of California, Berkeley. Planning theory
Frederick C. Collignon, Ph.D., A.I.C.P. Harvard University. Social policy, community planning
Timothy P. Duane, Ph.D. Stanford University. Environmental planning, energy issues, infrastructure
John D. Radke, Ph.D. University of British Columbia. Geographic information systems, environmental planning, database management

Assistant Professors
Karen Chapple, M.C.P., Ph.D. University of California, Berkeley. Local economic development, metropolitan planning, land use planning
Elizabeth Macdonald, M.C.P., Ph.D. University of California, Berkeley. Urban design, public spaces, streets, urban form
Robert S. Ogilvie, Ph.D. Columbia University. Community development
Anaya Roy, M.C.P., Ph.D. University of California, Berkeley. Urban development, comparative housing studies, gender and planning, science research methods

B prefix=language course for business majors
C prefix=cross-listed course
AC suffix=courset satisfies American cultures requirement
*Professor of the Graduate School
†Recipient of Distinguished Teaching Award

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Adjacent Professors
Arthur Blauschein, M.A. Columbia University. Public policy, community and economic development
Frederick Eiriz, M.C.P., J.D. Hastings College of the Law. Land use, environmental law, development law
Michael Smith-Heimer, M.C.P., Ph.D. 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 was born in the 19th century to deal with the problems of fast-growing industrial cities. Since then, city planning has expanded to include social reforms; 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 development, geographic information systems, comparative urban development, urban management, and of course, land use planning. Graduates of city planning programs work in city, state, and federal government; local governments; state and federal planning agencies; and for many public and private enterprises. 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 students to cities and urban environments as objects of study, through an interdisciplinary curriculum in various related social science fields and disciplines.

City and Regional Planning Minor. The Department of City and Regional Planning offers a minor in city and regional planning for all majors at the University. The purpose of this minor is to provide students with an educational experience that demonstrates the breadth and diversity of the planning profession, with an emphasis on planning issues and processes.

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 a self-defined emphasis): community development and housing; environmental policy and planning; land use planning; transportation 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 planning, and GIS and spatial analysis.

The M.C.P. degree requires the completion of 48 units of course work 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, some elect to write a master’s thesis.

The Department of City and Regional Planning participates in joint and concurrent master’s degree programs with the Departments of Architecture, Landscape Architecture and Environmental Plan-
ni ng, 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 practice to address the needs of cities and regions. 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. 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. 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.

Sophomore seminars are small interactive courses of- grade basis. Supervised experiences in the study of off-campus organizations relevant to specific aspects of city planning. Regular individual meetings with faculty sponsor and a written report are required.

84. Sophomore Seminar. (1,2) Course may be re- peated for credit as topic varies. One hour 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. Three hours of seminar per week per unit for two weeks. Three hours of seminar per week per unit for one week. Three hours of seminar per week per unit for half week. One and three hours of seminar per week per unit for 10 weeks. Three hours of seminar per week per unit for 10 weeks. Two hours of seminar per week per unit for 10 weeks. Two hours of seminar per week per unit for 10 weeks. Three hours of seminar per week per unit for 10 weeks. Three hours of seminar per week per unit for 10 weeks.

89. Special Group Study. (1-3) Group studies developed to meet specific needs of students. Must be taken on a pass/fail basis. Supervised experiences in the study of off-campus organizations relevant to specific aspects of city planning. Regular individual meetings with faculty sponsor and a written report are required.

90. Special Study for Advanced Undergraduates. (1-3) Course may be repeated for credit. Enrollment is restricted; see the introductory courses and curricula section of this catalog. One to three hours of directed group study per week. Must be taken on a pass/fail basis. Two hours of seminar per week per unit for 10 weeks. Three hours of seminar per week per unit for 10 weeks. Two hours of seminar per week per unit for 10 weeks. Three hours of seminar per week per unit for 10 weeks.

91. History of City Planning. (3) Three hours of lec- ture/discussion per week. The history of city planning and the city planning profession in the context of urban history. Principal focus on the evolution of American planning practice and theory since the late 19th century; some comparative and earlier material. (F) (New)-Land.

92. Public Economics. (3) Three hours of lec- ture/discussion per week. Prerequisites: 113A or equiv- alent. Roles of governmental agencies as producers of urban services in nonmarket setting; local public finance, taxation, and budgeting; measurement of benefits and costs; criteria and procedures for investment decisions concerning types and qualities of services and facilities. Required core-course.

93. Analytic and Research Methods for Planners. Course may be repeated for credit as modules vary. A series of core courses modules on research design strate- gies and analytic methods for planners. Each module will run for all or for a segment of a semester and will cover a cluster of methods. Students may take se- quentially 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 labo- ratory. Course is an introduction to basic reasoning and statistical techniques to solve planning and policy problems. Course focuses on (i) basic plan- ning techniques for analyzing and presenting sec- ondary data, preparing forecasts, and conducting re- gional economic analysis (weeks 1-8); (ii) inferential statistics and sampling, as applied to planning prob- lems; and (iii) basic multivariate techniques such as chi-squared and linear regression and advanced mul-
tivariate techniques such as multiple regression (weeks 9-15). For the two-option unit, students may take the first half of the class (weeks 1-8). (F) Chapple, Landis 204B. Research Methods for Planners. (2.4) Three hours of lecture/discussion per week for 10 weeks (2 units). Three hours of lecture/discussion per week for 15 weeks (3 units). Methods for research planning, including problem definition, observation, key informant interviewing, causal modeling, survey design and overall design of research, as well as memorandum writing and professional 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 may design complete only half of the assignments for their individual research may take the course for 2 units. (SP) Roy

204C. Introduction to GIS and City Planning. (3) Three hours of lecture/laboratory 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 will help expand their knowledge to include basic GIS concepts and applications. 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 a variety of statistical methods in planning research, with emphasis on causal modeling of cross-sectional data. Topics include: multiple regression analysis; residual analysis; weighted least squares; non-linear models; path analysis; discriminate analysis; and principal components analysis. (SP) Cohen

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 professional planner in municipal and state, as well as national and international governmental systems; major alternative definitions of city planning; relationship of long-range physical plan to urban development agencies; significance of city planning in the evolution of local government, as well as national government. (SP) Stroshine

207. Land and Housing Market Economics. (3) Three hours of lecture/discussion per week. Prerequisites: 113A or equivalent. Using microeconomics as its platform, course explores the process and pattern of land utilization from a variety of perspectives: the neighborhood, the city, and the metropolis. The approach blends real estate, descriptive urban geography, and urban history with economics. (SP) Landis

208. Plan Preparation Studio. (5) Three hours of seminar per week. Prerequisites: Consent of instructor. An introductory laboratory experience in urban plan preparation, including the use of graphic communication techniques appropriate to city planning and involving inspection and critique of research methods by graduate student groups in formulating planning policies and programs for an urban area. Occasional Friday meetings are required. (SP) Macdonald

209. Methods for Collaborative Planning: Meeting Management, Negotiation, and Consensus Building. (4) Four hours of lecture per week. Use of basic techniques including management, negotiation, mediation, consensus building, and collaborative planning for controversial issues. It deals with process design, strategies for change and leadership, and ways of building civil so-

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223. Economic Development Planning. (3) Three hours of lecture/discussion per week. Strategy and tools for developing employment attracting investment and improving the standard of living in regional, state, and city regions; organization of economic development activities, with a focus on current practices. (SP) Chapple

225. Workshop in Regional Analysis. (3.4) Three hours of lecture/discussion per week, plus five-week optional module. Prerequisites: 204A or 220. This course covers economic base analysis, data sharing/transfer techniques, input-output analysis, regional accounting, impact analysis, cluster analysis, and qualitative sectoral studies. Includes an optional 1-unit applied module during the last five weeks of instruction. (F) Chap-

227. Studies in Regional Growth and Development. (3) Three hours of seminar per week. Prerequisites: 220 or consent of instructor. Formerly 227. Intermediate to advanced course focusing on theory and empirical evidence for regional growth and development, using reading and discussion. Also listed as Information Systems C227. (SP) Staff

228. Research Workshop on Metropolitan Regional Planning. (4) Four hours of seminar and two hours of studio per week. Prerequisites: Relevant past coursework and consent of instructor. Field problem in major phases of metropolitan or regional planning work. A collaborative student-group effort in formulating policy or plan recommendations within specific governmental frameworks. (SP) Staff

229. Research Seminar in Regional Development. (3) Course may be repeated for credit. Three hours of seminar per week. Prerequisites: 220 and consent of instructor. A close examination of selected issues in policy formulation, methods, and path development. Through student/faculty research papers and class discussion. Designed primarily for Ph.D. students and master’s students writing professional reports and theses. (SP) Rode


231. Housing in Developing Countries. (3) Three hours of lecture/discussion per week. This course covers issues of housing policy and housing form in the urbanizing developing world from a comparative and integrative perspective. Topics include housing finance, land use, tenure, and other alternatives to the private automobile. Recent emphasis given to planning and designing for transit villages and transit-based housing. (F) Deakin

234. Housing and the Urban Economy. (3) Three hours of seminar per week. Prerequisites: Public Policy 210A-210B or equivalent. This course considers 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. It also analyzes the links between primary and secondary mortgage markets, securitization, and liquidity. Finally, the links between housing and related markets such as transportation and public finance—will be explored. Also listed as Public Policy C275. (F) 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 investigating the interaction of political-economy factors with the development process. The French planning experience will be used as a base for examining the literature from the various social sciences for their relevance to development planning. Cohen

B prefix=language code for business majors
C prefix=course satisfies R&C requirement
AC suffix=course satisfies American cultures requirement
*Professor of the Graduate School
**Recipient of Distinguished Teaching Award
requisites: 235. Studio experience in analysis, policy advising, and project design or general plan preparation for urban communities undergoing development, with a focus on site development and project planning. (F) Smith-Heimer

240. Theories of Urban Form and Design. (3) Three hours of lecture per semester. Formerly Interdepartmental Studies 206. Fours of seminar/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 relationships 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


242. Urban Design Research Seminar. (1) Course may be repeated for credit. Two hours of seminar per week. 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. Research topics may include 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: Graduate student in Environmental Design. The seminars will review the limitations and observations for urban 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.

248. Advanced Studio: Urban Design/Environmenal Planning. (5) 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) Bosselmann, MacDonald

249. Urban Design in Planning. (3) Three hours of seminars 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 engagement, the use of private investment, formulation and alternatives generation, environmental media and presentation, design guidelines and review, environmental evaluation 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 conduct of local 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) Lands

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 also relate the institutional and policy 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

252. Land Use Controls. (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 techniques of land use control. Objective is to acquaint students with major aspects of regulatory techniques and the legal, administrative-political equity aspects of their implementation. (F) Etzel

C253. Environmental Law and Resource Management. (3) Three hours of seminar per week. Prerequisites: Consent of instructor. Formerly Interdepartmental Studies 233. An introduction to the American legal system governing the use and management of natural resources, and an overview of the major techniques that have been developed by courts, legislatures, and administrative bodies to protect natural resources. Topics will include nuisance law, constitutional constraints, environmental impact assessment, permit systems for development control, pollution control, natural resources planning law. Duane

254. Sustainable Communities. (3) Three hours of lecture/discussion per week. Prerequisites: Graduate standing or consent of instructor. This 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 attempts to incorporate sustainability principles into plans, planning, and urban design; (3) an examination of European attempts at developing models and patterns 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 Geographical Information Systems (GIS). The course focuses on GIS and its application to both city and regional problems in the Bay Area and offers students a toolkit for integrating spatial information into planning solutions. The laboratory sessions will mainly employ a vector model to solving problems. Topics include probability and spatial analysis, 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 Landscape Architecture 237. Three hours of lecture per week. Prerequisites: C251/City and Regional Planning C231. A review of the techniques used in environmental planning, and evaluation of alternate means of implementation in varying environmental and political circumstances. The course will examine and critique a number of well-known environmental planning programs and plans. Lectures and discussion will address recurrent planning problems, such as the limitations of available planning devices, legal and political constraints on plans, conflicts among specialists. Also listed as Landscape Architecture C237. (F,SP) Duane

258. Land Use Planning Studio. (4) Two hours of lecture and four hours of studio per week. Prerequisites: 208 or 235. Formerly 258. Studio experience in analysis, policy advising, and implementation in an urban setting. Students will engage in group work for real clients (e.g., community-based organizations or local government agencies), culminating in a final report or proposal. (SP) Ogilvie


271. Development Theories and Practices. (3) Three hours of seminar per week. This course covers the theories and praxis of development strategies. It studies the project of development, from its Cold War launching to its metamorphosis into the current era of economic globalization and liberalization. And it examines the theoretical models and discursive practices that have accompanied each phase, including the recent critiques put forth by feminism and postcolonialism. The course also locates development in the industrialized world, “here” rather than “elsewhere,” thereby unsettling the normalized hierarchy of First and Third Worlds. (F) Roy

272. Third World Urban Development Issues and Policy Options. (3) Three hours of lecture and discussion per week. Prerequisites: Consent of instructor. This course examines urban and regional planning policies and policy responses in a variety of cities throughout the developing world, including housing delivery, urban infrastructure, economic productivity, and environmental quality responses of international agencies, national and local governments, and para-statals will be assessed. Students will be required to write and present a case study paper. (SP) Dobson

275. Comparative Analysis of Urban Policies. (3) Three hours of lecture/discussion per week. Prerequisites: Consent of instructor. Formerly C262. Description, analysis, and evaluation of urban policies in a variety of social and spatial contexts, with references to state-planned societies. Main topics: national and local public policies in regional development, housing, trans-
280. Doctoral Seminar. (3) Course may be repeated for credit. Three hours of seminar per week. Prerequisites: Consent of instructor. Advanced study in city and regional planning. Specific topics to be announced at each seminar. (F,SP) Staff.

281. Theories of Planning Practice. (3) Three hours of lecture per week. Prerequisites: Graduate standing. Suitable for graduate students in professional programs doing research on planning and policy practice issues. Focuses on theory and practice of planning, with an emphasis on different types of knowledge in different kinds of practice. Compares positivist, interpretive, and critical theory views of knowledge and links these to policy analysis, interactive planning, group processes, and emerging models of critical planning practice. (SP) Innes

282. Planning and Governing. (3) Three hours of lecture/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 planning strategies for conditions of uncertainty in the absence of science-based knowledge. (F) Christerensson

284. Advanced Topics in Planning Theory. (3) Course may be repeated for credit. Three hours of seminar per week. Prerequisites: 282, 221, 202 or equivalent, 252 or equivalent. Selected advanced topics in planning theory.

290. Topics in City and Metropolitan Planning. (1-3) 0.4 units per semester. Prerequisites: Consent of instructor. Topics may concern study design, graduate teaching experiences, community development, and planning practice. May be offered, taking advantage of guest instructors. Three hours of seminar per week. Course may be repeated for credit. Three hours of seminar per week. Prerequisites: 282, 221, 202 or equivalent, 252 or equivalent. Selected advanced topics in planning theory.

295. Supervised Research 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 student instructor. Supervised teaching experience in courses related to planning. Credit may not be applied toward the M.C.P. degree. (F,SP)

297. Group Studies. (1-3) Can be used for degree requirements. (F,SP) California Institute of Technology. Air quality engineering, environment, engineering, soil mechanics

298. Group Studies. (1-3) Can be used for degree requirements. (F,SP) California Institute of Technology. Air quality engineering, environment, engineering, soil mechanics

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 student instructor. Supervised teaching experience in courses related to planning. Credit may not be applied toward the M.C.P. degree. (F,SP)

Civil and Environmental Engineering
(College of Engineering)

Department Office: 760 Davis Hall #1710, (510) 642-5261 http://www.ce.berkeley.edu/
Chair: Gregory L. Fenves, Ph.D.

Professors
Lisa Alvarez-Cohen (Fred and Claire Sauer Chair of Environmental Engineering), Ph.D. Stanford University. Environmental Engineering, pollution abatement, hazardous waste management.
David B. Ashley, Ph.D. Stanford University. Risk analysis methods for project management and construction engineering.
Alphallahn Asatneh-Asl, Ph.D. University of Michigan. Experimental research, design of steel structures.
Robert G. Bear, Ph.D. University of Western Australia. Nedsands, Offshore and coastal structures, ocean and coastal systems, structural assessment and management.
Jonathan D. Bray, Ph.D. University of California, Berkeley. Earthquake engineering, geotechnical engineering, structural dynamics, numerical methods for environmental engineering.
Michael J. Cassidy, Ph.D. University of California, Berkeley. Traffic operations and control, traffic flow theory.
Anil K. Chopra, (Horoize, Dorothy and Katherine Johnson Professor of Engineering), Ph.D. University of California, Berkeley. Dynamics of structures, earthquake engineering.
George A. Cooper, Ph.D. University of Cambridge. Petroleum geology.

Carlos Daganzo (Robert Horonjeff Professor of Civil Engineering), Ph.D. University of California, Berkeley. Traffic theory, mathematical analysis.
Amed Der Kiureghian (Mary and E. Edward Samuelson Professor of Civil Engineering), Ph.D. University of Illinois. Structural risk, reliability analysis.
Gregory L. Fenves (Chair and T.Y. and Margaret Lin Professor of Engineering), Ph.D. University of California, Berkeley. Structural mechanics, computer-aided engineering.
Filip C. Filipov (Roy W. Carlson Distinguished Professor of Civil Engineering), Ph.D. University of California, Berkeley. Analysis, design of concrete structures.
Sanjay Govindjee (Vice Chair, Technical Support and Research), Ph.D. Stanford University. Theoretical and computational mechanics.
Robert A. Harley, Ph.D. California Institute of Technology. Air quality engineering, emission control strategies.
James R. Hunt (Lawrence E. Peirano Professor of Civil and Environmental Engineering), Ph.D. University of California, Berkeley. Transportation technology, chemical and environmental engineering.
Robert A. Harley, Ph.D. California Institute of Technology. Air quality engineering, emission control strategies.
Sanjay Govindjee (Vice Chair, Technical Support and Research), Ph.D. Stanford University. Theoretical and computational mechanics.

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 relative to specific aspects of practice in city or regional planning. 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 297 can be used for degree requirements. (F,SP)

298. Group Studies. (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 satisfactory/unsatisfactory basis. Section C to be graded on an In-Progress basis only. Prerequisites: Consent of instructor. Topics to be announced at beginning of each semester. No more than 3 units may be taken in one section.

299. Individual Study or Research. (1-12) Course may be repeated for credit. Regular meeting to be arranged with faculty sponsor. Prerequisites: Consent of instructor. Individual study or 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. (1-8) Course may be repeated for credit. Regular meeting to be arranged. Must be taken on a satisfactory/unsatisfactory basis. Prerequisites: Ph.D. students only. Individual study in consultation with the major field adviser, intended to provide an opportunity for qualified students to pursue the various examinations required for the Ph.D. May not be used for unit or residence requirements for the doctoral degree. Students may earn 1-8 units of 602 per semester. John R. M. Tenenbaum may accumulate more than a total of 16 units of 602. (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 appointment as a graduate student instructor. Supervised teaching experience in courses related to planning. Credit may not be applied toward the M.C.P. degree. (F,SP)
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Bozidar Stojadinovic, Ph.D. University of California, Berkeley. Steel and composite structures, earthquake engineering.

Assistant Professors

Aleksandar Bayen, Ph.D. Stanford University. Distributed and large-scale systems; combinatorial optimization, air traffic control.

Argad Horvath, Ph.D. Carnegie Mellon University. Environmental modeling; economic analysis of civil infrastructure systems; life-cycle assessment, environmental management.

Shafqat Li, Ph.D. Northwestern University. Theoretical and applied mechanics, micromechanics, and computational mechanics.

Xu Liang, Ph.D. University of Washington, Seattle. Surface water-hydrology, land-atmosphere interactions, hydrometeorology, hydro-informatics, remote sensing.


Raja Sengupta, Ph.D. University of Michigan. Systems theory, wireless networks, transportation, unmanned air vehicles.

Adjunct Professors

Norman Abrahamson, Ph.D.
Alexander Skabardonis, Ph.D.

Associate Adjunct Professors

H. Glenn Ballard, Ph.D.
Norman Abrahamson, Ph.D.
Michael F. Riemer, Ph.D.

Adjunct Professors

Norman Abrahamson, Ph.D.
Alexander Skabardonis, Ph.D.

Program Overview

The objective of the civil engineering program at Berkeley is to provide the needed background for students who wish to pursue engineering as a profession and for students who wish to engage in engineering research. The program also provides a broad technical education for other pursuits. The program is based on the concept that civil and environmental engineers must be well grounded in the sciences, broadly educated in humanistic and social studies, cognizant of economic factors, skilled in communicating technical ideas, and knowledgeable about the broad principles that underlie the practice of the profession.

The four-year undergraduate curriculum leading to the B.S. degree provides an education that is sufficiently 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 Accreditation Commission of the Accreditation Board for Engineering and Technology, 111 Market Place, Suite 1050, Baltimore, MD 21202-4012. (410) 347-7700.

Students may receive a bachelor's degree at the end of four years and a master's degree at the end of five years, provided they have been accepted for graduate study.

In addition, the department offers a minor in structural engineering, designed particularly for students in the College of Engineering, Berkeley, for those who wish to take courses in technical tools (e.g., information management, control, modeling) and human dimensions (e.g., economics, public policy, management, city and regional 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 Announce-ment of the College of Engineering (available with out charge from the College of Engineering, Uni-versity of California, Berkeley: Berkeley, CA 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 requirements for fulfilling the Humanities/Social Studies Core Requirement: Reading and Composition requirement. Refer to www.coe.berkeley.edu/current_students/hssreq.html for details or go to 308 McLaughlin Hall for a handout.

Other requirements of the curriculum include:


Upper Division. Civil Engineering 100, 130, 192, an engineering science elective (Mechanical Engineering 104 or Engineering 115), four of seven courses in the elective core (Civil Engineering 103, 111, 120, 152, 155, 167, and 175), 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 comprises the following graduate groups: Engineering and Project Management; Environmental Engineering; Geoenvironmental Engineering; Civil and Environmental Systems; Structural Engineering Mechanics and Materials (SEMM); and Transportation Engineering. A new cross-disciplinary program focuses on civil engineering systems within each group, specialized programs and interdisciplinary programs, including earthquake engineering, ocean engineering, water resources engineering, air quality, and groundwater hydrology, are also available.

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 is normally of one year's duration; the doctoral programs require at least two years after the attainment of a master's degree, and 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).

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; 26, En-vironmental Mechanics; 77, Civil Engineering Problem Solving Using Computers; 101, Fractals, Chaos, and Complexity Around Us; 240, Fundamentals of Multiphase Flow in Earth Sys-tems; 241, Mathematical and Numerical Methods in Earth Sciences.

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/not passed basis. Berkeley 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. Berkeley seminars are offered in all campus departments, and topics vary from de-
department to department and semester to semester. Staff

60. Structure and Properties of Civil Engineering Materials. (3) Students may receive two units of credit for 60 after taking Engineering 45. One unit of a deficient grade may be removed in Engineering 45 with a minimum grade of C. Offered by department; four lectures and one laboratory per week. Introduction to structure and properties of civil engineering materials such as asphalt, cements, concrete, geological materials (e.g. rock and soil), polymers, and wood. The properties range from elastic, plastic and fracture properties to porosity and thermal and environmental responses. Laboratory tests include evaluation of behavior of these materials under a wide range of conditions. (F,SP) Monteiro, Ontestar

70. Engineering Geology. (2) Three hours of lecture/laboratory demonstrations per week. Prerequisites: Chemistry 1A. Principles of physical and structural geology; the influence of geological factors on engineering works and the environment. Field trip. (F,SP) Glaser, Stitar

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 the crucial second year. The topics vary from department to department and semester to semester. Enrollment limited to 15 sophomores. (F,SP)

92. Introduction to Civil and Environmental Engineering. (1) One hour of lecture per week. Must be taken on a passed/not passed basis. A course designed to familiarize the entering student with the scope and environment of civil and environmental engineering and its component specialty areas. (F,SP) Fenves, Harley

93. Engineering Data Analysis. (3) Students will receive no credit after taking Statistics 25. Two hours of lecture and three hours of laboratory per week. Prerequisites: Mathematics 77 or equivalent. Application of the concepts and methods of probability theory and statistical inference to CEE problems and data; graphical analysis and presentation of data; elements of probability theory; random variables and expectation; statistical inference. Applications to various CEE problems and real data will be developed by use of computer programming languages. The course introduces the student to various domains of uncertainty analysis in CEE. (F,SP) Der Kureghian, Hansen, Liang, Madanat, Rubin

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. Must be taken on a passed/not passed 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 passed/not passed basis. Prerequisites: Freshman or sophomore standing and consent of instructor; a minimum grade point average of 3.3 required. Supervised independent study and research. (F,SP) Upper Division Courses

100. Elementary Fluid Mechanics. (4) 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, pumps, turbines. Individual laboratory experiments conducted by the student. (F,SP) Rubin, Stacey

101. Fluid Mechanics of Rivers, Streams, and Wetlands. (3) Three hours of lecture per week. Prerequisites: 100, or consent of instructor. Analysis of steady and unsteady open channel flow and application to rivers and streams. Examination of mixing and transport in rivers and streams with emphasis on design projects to control pollution in one of the following systems: wastewater treatment plant, sanitary landfill, municipal waste incinerator, contaminated groundwater remediation, or fossil-fuel-fired power plant. Lectures will focus on design principles, economic optimization, legal and institutional constraints on design, and project management. (SP) Hermanowicz

114. Environmental Microbiology. (3) Three hours of lecture per week. Prerequisites: Chemistry 1A-1B. 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 or equivalent. The course provides an introduction to the application of principles of inorganic, physical, and solute solution chemistry to aquatic systems, both in the aquatic environment and in water and wastewater treatment processes. (F) Kolpin

C116. Environmental Aquatic Geochemistry. (3) Three hours of lecture per week. Prerequisites: 111 or equivalent. Chemical mechanisms of reactions controlling the fate of pollutants in the subsurface environment. Chemical reactions in subsurface waters. Chemical pathways of detoxification. Chemical and biogeochemical modeling of pollutant geochemistry. Also listed as Environ Sci, Policy, and Management C128. (SP) Spotsis

120. Structural Engineering. (3) Three 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 application. 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


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 Load and Resistance Factor Design (LRFD) for steel members, beam-columns, compression members, beams and beam-columns; typical shear and moment connections, welded and bolted. Behavior and characteristics of steel structural systems. Design of a steel building structure, including resistance to earthquake loads. Laboratory includes problem-solving sessions and actual testing of steel components. (F,SP) Astanine, 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 one-way slabs considering deflections, flexure, shear and an-
chorage; behavior and design of columns including slenderess effects; design of spread footings; design of lateral load resisting frames and walls for earthquake effects. Laboratory includes experiments and design sessions leading to development of structural system design project in infrastructure concrete. (F,SP) Mosalam, A.

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) Mahin, Filippou

125. Dynamic Structures 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, Mahan

130. Mechanics of Materials I (3) Three hours of lecture per week. Prerequisites: 60 or Engineering 45 and Engineering 36. 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 for displacement systems; energy methods for vibration and buckling. (F,SP) Goveindjee, Armero, Li

131. Advanced Mechanics of Materials. (3) Three hours of lecture per week. Prerequisites: 130; senior or graduate Standing. Mechanics of load-carrying members: stress, strain, elastic stress-strain relations, work and energy; boundary-value problems. Torsion of beams and plates; asymmetric bending, thermoelastic bending, thin-walled and sandwich beams, introduction to plate theory. Buckling of bars. (F) Armero, Makris

C133. 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 major. This is an introductory course on the finite element method and is intended for seniors in engineering and applied science disciplines. The course covers the basic principles of the method, including the concept of a finite element model, the approximation of the system under consideration, solution of the finite element equations, and post-processing the results. (SP) Cassidy, Daganzo, 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; technology of selection of materials; control of quality; types of concretes and 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) Monleiro

166. Construction Engineering. (3) Two hours of lecture and three hours of laboratory per week. Prerequisites: Upper division standing, 167 recommended. Introduction to construction engineering and field operations. The construction industry, construction methods and practices, productivity improvement, equipment selection, site layout formwork, erection of steel and concrete structures. Labs demonstrate the concepts covered. Field trips to local construction projects. (F) Horvath

167. Engineering Project Management. (3) Students will prepare a project plan and determine the necessary resources using a software tool. (F) Osteragh, Mosalam

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 include mining and civil engineering involving design of underground openings in competent, layered, and plastic rocks, slopes cut in jointed rock, and foundations on weak or fractured rocks. (C) A. Mosalam

171. Introduction to Geological Engineering. (3) Three hours of lecture per week. Prerequisites: 70 or equivalent. Introduction to geological engineering of underground openings; evaluation of rock properties; performance and analysis of rock support. (SP) Cassidy, Daganzo, Hansen, Kanafani, Madanat

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 C127 and Material Science C172. Introduction to analysis of stress and strain and its application to fracture and deformation in rocks of all kinds. Applications include mining and civil engineering involving design of underground openings in competent, layered, and plastic rocks, slopes cut in jointed rock, and foundations on weak or fractured rocks. (C) A. Mosalam

173. Groundwater and Seepage. (3) Three hours of lecture and one hour of discussion/laboratory per week. Prerequisites: Senior standing in engineering or science, 100 recommended. Introduction to principles of groundwater flow, including flow through porous media, numerical analysis, pumping tests, groundwater geology, contaminant transport, and design of waste containment systems. (F,SP) Rubin, Sitar

175. Geotechnical and Geoenvironmental Engineering. (3) Two hours of lecture per week. Prerequisites: Upper division standing. Review of soils mechanics; behavior of soil mass and foundation systems; design and analysis of embankments and canals; slope stability analysis; soil improvement; design and evaluation of special foundations. (SP) Cassidy, Dowla, Dominguez, Mosalam.
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of soils, including soil mineralogy, soil-water movement, effective stress, consolidation, and soil strength. Geochemicals and material interface properties. The use of soils and geochemicals in geotechnical and geoenvironmental applications. Site investigation, monitoring techniques. Laboratory testing and evaluation of soil composition and properties. (F,SP) Bray, Pestaña, Seed, Sitar

176. Waste Containment Systems. (3) Three hours of lecture per week. Prerequisites: 111 and 117 are required. Study of methods for generation and disposal of hazardous and characterization of wastes, fate, and transportation of contaminants in soil; soil-water-contaminant interactions; engineering soil properties; use of earth and geosynthetic liners in waste containment systems; principles, design, and construction of linear and leachate collection systems; application to landfill design. (SP) Pestaña

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 topics in an integrated fashion. (F) Bray, Seed


C180. Construction, Maintenance, and Design of Engineered Systems. (4) Three hours of lecture and one hour of discussion per week. Prerequisites: 120, 167, and 175 or consent of instructor. Procedures, equipment, and techniques to construct, maintain, and design steel and concrete structures and foundations. Management and quality assurance, and control of these activities. Class team projects address design, construction, and maintenance of contemporary civil and environmental engineered systems. Teams identify an experienced engineering consultant, after which they construct a physical model of the system or a critical part of the system. Finally they develop a formal report on their project and present project results to a panel of judges at the end of the semester. Also listed as Ocean Engineering C180. (SP) Bea

191. Civil and Environmental Engineering Systems Analysis. (3) Two hours of lecture and three hours of combined laboratory and section per week. Prerequisites: 92, 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 methods that are tools that are used for planning or managing these systems. The problems include design of a public transportation system for an urban area, resource allocation for the maintenance of a water system, the development of repair and replacement policies for reinforced concrete bridge decks, traffic signal control for an arterial street, scheduling in a large-scale construction project. (SP) Madanat, Sengupta

192. The Art and Science of Civil and Environmental Engineering Design Practice. (1) One hour of lecture per week. Prerequisites: Senior standing in civil and environmental engineering. A series of lectures by distinguished professionals designed to provide an appreciation for the science, technology, and professional needs of society in conceiving projects, balancing the interplay of conflicting demands, and utilizing a variety of disciplines to produce unified and efficient systems. (SP) Fenves

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. Reliability and risk analysis and reliability evaluation. Occurrence models; extreme value distributions. Analysis of uncertainties. Introduction to Bayesian statistical decision theory and its application in engineering decision-making. (F) Der Kiureghian

197. Field Studies in Civil Engineering. (1-4) Course may be repeated for credit. One to four hours of field work per week. Must be taken on a passed/not passed basis. Supervised experience in off-campus fieldwork in waste containment systems; application of civil engineering. Written report required at the end of the semester. (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 Curricula section of this catalog. 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

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. Focus on fluid mechanics of the natural water and air environment. Flux analysis procedures; unsteady free surface flow; stratified flow; Navier-Stokes equations; boundary layers; Boussinesq approximations; Reynolds equations, turbulence modeling; mixing, diffusion, dispersion, and contaminant transport; geo- physical flows in atmosphere and ocean; steady and unsteady flows in shallow water. Application to en- vironmentally sensitive flows in surface and groundwa- ter and in lower atmosphere. (F) Staff

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 equivalent. Formerly 202A. Introduction to the philosophy and practice of numerical modeling of environmental flow processes. Topic will change each semester. Course of structured computer modeling assignments on a single topic in environ- mental flow modeling, supported by focused lectures and discussions on the physical processes and on the associated numerical analysis. Topics such as ocean outfalls, wave penetration in harbors, contaminant transport, flood and tide propagation in channels and data analysis of climate, air, and water quality observa- tions. (SP) Staff

202A. Vadose Zone Hydrology. (3) Students will re- ceive no credit for 202A taken 202B before fall 1998. Three hours of lecture per week. Prerequisites: 173 or equivalent. Formerly 202. Course addresses fundamental and practical issues in flow and transport phenomena in the vadose zone, which is the geologic zone between the land surface and the regional wa- ter table. A theoretical framework for modeling these phenomena will be presented, followed by applications in the areas of ecology, drainage, and irrigation in the vadose zone. 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 290S completed before 1998. Three hours of lecture per week. Prerequisites: 173 and Mathematics 53, 54 or equivalent, or consent of instructor. Formerly 290S. Topics in anal- ysis and modeling of spatial heterogeneity, estimation in the earth sciences, and flow and transport pro- cesses in geologic environments. Course empha- sizes modeling of flow and transport under conditions of spatial heterogeneity of the hydrogeologic param- eters. Fundamentals of the stochastic approach to spa- tial prediction and risk assessment and geostatistics, and fundamen- tals as well as practical aspects 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 process of water in the atmosphere, over land surface, and within soil; advanced representation and models for infiltration and evapotranspiration processes; partition of energy in the hydrological cycle; snow, rain, and snowmelt processes; applications of remote sens- ing; flood and drought, and issues related to advanced hydrological modeling. Students will address practical problems and will learn how to perform opera- tional hydrologic forecasting model, and build hy- drological models. (F) Liang

205B. Load Engineering. (3) Three hours of lecture per week. Prerequisites: 125, 193 or equivalents and senior design experience. Processes and procedures to determine loads to design or requalify structure and foundation systems including bridges, buildings, transportation, harbor, coastal, and offshore structures. Sources of load, and load processes, loading effects. Probabilistic, empirical, and analytical considerations. Operations, accidental, and environmental loadings including those due to wind, current and wave, ground movements, ice, snow, explosions, and fires. Also listed as Ocean Engineering C205B. (F,SP) Staff

206N. Planning and Management of Environmen- tal and Water Systems. (3) Three hours of lecture per week. Prerequisites: 100 or consent of instructor. Formerly 206. Course addresses the fundamental and practical issues of environmental planning and management. Quantitative overview of the engi- neering, economic, and policy aspects of water and environmental systems will be presented. Topics in water quality, the environment, environmental management include benefit cost analysis, contingency evaluation, inflation, pricing, marketing, transfers, uncertainty and decision analysis, and system analysis and their ap- plications. (SP) Liang

209A. Hydrologic Mixing Processes. (3) Three hours of lecture per week. Prerequisites: 100, Math 53, 54, or equivalent. Application of fluid mechanics principles to problems of pollutant transport and mixing in the wa- ter environment. Concepts of hydrological diffusion and turbulence mixing in rivers, reservoirs, and estuaries; effects of stratification on mixing; theory of jets and plumes, and introduction to jets and out- falls. (SP) Stacey

209B. Mechanics of Stratified Flows. (3) Three hours of lecture per week. Prerequisites: 100, C course satisfies R&C requirement, and C course satisfies American cultures requirement. Graduate-level fluid mechanics course (200A or equivalent). The fluid mechanics of density-stratified environmental flows. Internal wave dynamics in layered and continu- ous stratification and flows created by thermal waves, internal hydraulics and gravity currents. Turbulent mix- ing in the presence of stratification. Connection be- tween turbulence and internal waves. Horizontal den- sity fronts and frontogenesis; double-deck flows in lakes, estuaries, and the ocean. (SP) Stacey

210A. Control of Water-Related Pathogens. (3) Three hours of lecture per week. Prerequisites: Basic course in microbiology recommended; graduate stand- ing or consent of instructor. Comprehensive strategies for the assessment and control of waterborne human pathogens (disease-causing microorganisms). Trans- mission routes and life cycles of common and emerg- ing organisms, conventional and new detection meth- ods based on molecular, and animal sources, fate and transport in the environment, treatment and disinfection, appropriate technology, reg- ulatory approaches, water reuse. (SP) Nelson

211A. Environmental Physical-Chemical Pro- cesses. (3) Three hours of lecture per week. Prereq- uisites: 100 or equivalent and C course satisfies aquatic
211B. Environmental Biological Processes. (3) Three hours of lecture per week. Prerequisites: 111 or equivalent and course work in microbiology, or consent of instructor. Fundamental concepts of microbiology: mechanisms to describe, predict, and control behavior of environmental biological systems. Topics include the stoichiometry, energetics and kinetics of microbial reactions, suspended and biofilm processes, carbon and nutrient cycling, and bioremediation applications. (SP) Alvarez-Cohen

212. Wastewater Treatment Engineering II. (3) Three hours of lecture per week. Prerequisites: 111 and 115. Wastewater discharge and receiving water standards. Biological-chemical treatment and sludge treatment and disposal fundamentals and design. Included are primary treatment, microbial kinetics of biological processes, activated sludge, anaerobic digestion, and nutrient removal. (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, pollutants, smog-forming gases, and nutrients in the environment. Students will use modern analytical techniques to quantify pollutants in air, sediments, soils, and water at sites of local interest. In addition, waste pollutant fate and 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: 115L, 117L (may be taken concurrently), 211, 212 (may be taken concurrently). Unit operations and processes for water and wastewater treatment. Lectures and laboratories on trajectories, filtration, aeration, ion exchange, chemical treatment of wastewater, biological filters, activated sludge, and anaerobic digestion. Theory and random processes. 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. Crossings, first-exursion problem, and first-passage distributions of peaks and maxima. 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: Grad standing or consent of instructor. Advanced topics in the classical response of materials: Simple tension in elastic, plastic and viscoelastic members. Continuum mechanics: The stress and strain tensors, equilibrium, compatibility. Three-dimensional elastic, plastic and viscoelastic problems. Thermal, transformation, and decaying 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 framework of continuum mechanics of solids. Finite elasticity; invariance. Energy principles: principles of virtual and complementary virtual work; primary and mixed variational principles. Theory of stability: Euler method; stability 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) Amro

233. Computational Mechanics. (3) Three hours of lecture per week. Prerequisites: 231 or Material Science and Engineering 211 or Mechanical Engineering 185. Computational methods applied to inelastic deformation of solids; 1-D and 3-D large and small deformations; modern continuum plasticity and viscoelasticity models and their algebraic approximations; viscoelastic regularization and softening; thermodynamics and its relationship to algorithmic stability; return mappings,

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 and using quantitative tools to describe, predict, and control the behavior of physical-chemical processes. Topics include reactor hydromechanics and reaction kinetics, gas transfer, adsorption, particle characteristics, flocculation, gravitational separations, filtration, membranes, and disinfection. (F) Nelson

211B. Environmental Biological Processes. (3) Three hours of lecture per week. Prerequisites: 111 or equivalent and course work in microbiology, or consent of instructor. Fundamental concepts of microbiology: mechanisms to describe, predict, and control behavior of environmental biological systems, especially those affecting water quality. Incorporates basic fundamentals of microbiological engineering to describe, predict, and control behavior of environmental biological systems. Topics include the stoichiometry, energetics and kinetics of microbial reactions, suspended and biofilm processes, carbon and nutrient cycling, and bioremediation applications. (SP) Alvarez-Cohen

212. Wastewater Treatment Engineering II. (3) Three hours of lecture per week. Prerequisites: 111 and 115. Wastewater discharge and receiving water standards. Biological-chemical treatment and sludge treatment and disposal fundamentals and design. Included are primary treatment, microbial kinetics of biological processes, activated sludge, anaerobic digestion, and nutrient removal. (SP) Hermanowicz

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215. Process Engineering Laboratory. (3) One hour of lecture and six hours of laboratory per week. Prerequisites: 115L, 117L (may be taken concurrently), 211, 212 (may be taken concurrently). Unit operations and processes for water and wastewater treatment. Lectures and laboratories on trajectories, filtration, aeration, ion exchange, chemical treatment of wastewater, biological filters, activated sludge, and anaerobic digestion. Theory and random processes. 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. Crossings, first-exursion problem, and first-passage distributions of peaks and maxima. 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: Grad standing or consent of instructor. Advanced topics in the classical response of materials: Simple tension in elastic, plastic and viscoelastic members. Continuum mechanics: The stress and strain tensors, equilibrium, compatibility. Three-dimensional elastic, plastic and viscoelastic problems. Thermal, transformation, and decaying stresses. Applications: Plane problems, stress concentrations at defects, metal forming problems. Also listed as Materials Science and Engineering C211, (F) Govindjee

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233. Computational Mechanics. (3) Three hours of lecture per week. Prerequisites: 231 or Material Science and Engineering 211 or Mechanical Engineering 185. Computational methods applied to inelastic deformation of solids; 1-D and 3-D large and small deformations; modern continuum plasticity and viscoelasticity models and their algebraic approximations; viscoelastic regularization and softening; thermodynamics and its relationship to algorithmic stability; return mappings,
C236. Micromechanics. (3) Three hours of lecture per week. Prerequisites: C231, Materials Science and Engineering C211, or consent of instructor. Basic theories, analytical techniques, and mathematical foundations of micromechanics. It includes 1. physical micromechanics, such as mathematical theory of dislocation, fracture and fatigue models; 2. micro-elasticity that includes Eshelby’s eigenstrain theory, comparison variational principles, and micro-crack/micro-cavity based damage theory; 3. theoretical components that can be divided into the main problems in evaluating overall material properties; 4. meso-elasticity that includes meso-damage theory, and the crystal plasticity; 5. homogenization theory for materials with complex microstructures. Also listed as Materials Science and Engineering C214. (SP) Gowindjee, Li

240. Civil Engineering Materials. (3) Two hours of lecture and three hours of laboratory per week. Prerequisites: An undergraduate course in civil engineering materials. Microstructures 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, fatigue, and failure mechanisms. (F) Monteiro, Osterag, Williamson

241. Concrete Technology. (3) Three hours of lecture per week. Prerequisites: 165 or equivalent. Properties of fresh and hardened concrete; strength, elastic behavior, creep, shrinkage, and durability to chemical and physical factors, and concrete-making methods. Recent advancements in concrete technology: high-strength, high-workability, and high-performance concrete; fiber-reinforced concrete, and roller-compacted concrete. (SP) Matsuo

242. Concrete Behavior. (3) One hour of lecture and three hours of laboratory per week. Relationship between concrete microstructure and mechanical properties. Composite materials theory for concrete. Vi- sioelasticity; plasticity; fracture mechanics; thermal behavior of concrete. Use of computers to acquire data and control tests; pseudo-dynamic testing method; standard proof-testing for capacity assessment; non-destructive testing for condition assessment, and virtual experimentation. Upon completing this course, the students will be able to use experimental methods to investigate the behavior of a structure and to evaluate its condition. Offered odd-numbered years. (F) Astaneh, Fathi

245. Behavior of Reinforced Concrete. (3) Three hours of lecture per week. Prerequisites: 225 and 230. Advanced topics in reinforced concrete construction, including inelastic flexural behavior; applications of plastic analysis to reinforced concrete frames; behavior in shear and torsion; yield-line analysis of slabs; behavior under cyclic and reversed loading; seismic rehabilitation. Offered even-numbered years. (SP) Moehle, Filippou

246. Prestressed Concrete Structures. (3) Three hours of lecture per week. Prerequisites: 244 or consent of instructor. Advanced topics in prestressed concrete construction, including the design of prestressed concrete beams and columns. Combination of straight, curved members and non-linear analysis. Design of pretensioned and post-tensioned prestressed concrete structures. (F) Moehle, Filippou

247. Design of Steel and Composite Structures. (3) Three hours of lecture per week. Prerequisites: 222 or equivalent. Design and analysis of steel and composite structures, including steel beams, column and connections. Design of beams for bending, shear and axial forces. (SP) Astaneh, Mahin

248. Behavior and Plastic Design of Steel Structures. (3) Three hours of lecture per week. Prerequisites: C222 or equivalent. Topics related to inelastic behavior of steel members and structures. Behavior of plastic hinge in members subjected to bending moment, axial force, shear, and their combinations. Collapse mechanisms of steel members and structures; stress and strain braced and unbraced systems. Inelastic cyclic behavior of steel components. Introduction to fracture and fatigue of steel components. Offered even-numbered years. (F) Astaneh, Fathi

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. This course covers the following topics: similarity 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 capacity assessment; non-destructive testing for condition assessment, and virtual experimentation. Upon completing this course, the students will be able to use experimental methods to investigate the behavior of a structure and to evaluate its condition. Offered odd-numbered years. (F) Astaneh, Fathi

250. Transportation Infrastructure Management. (3) Three hours of lecture per week. Prerequisites: Graduate standing or consent of instructor. A systematic approach to traffic safety will be presented. Students will learn about accident prevention and analysis, safety and airfreight will be considered. Course is designed to treat business problems with some quantitative modeling and empirical analysis. (SP) Staff

256N. Transportation Policy and Planning. (3) Three hours of lecture per week. Prerequisites: Consent of instructor. Vehicle routing. Transportation-inventory-production interrelationships, physical distribution networks, many-to-many networks (airlines, postal, etc.), the role of transshipments and terminals in logistic systems for the transportation of passengers and goods and passengers, public and private transportation 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 of mass transit systems, their operation and management. Technology of transit vehicles and structures, Impact on urban land use. Public policy and financing. (SP) Staff

260. Air Transportation. (3) Three hours of lecture per week. Prerequisites: Graduate standing or consent of instructor. Nature of civil aviation; structure of the airline industry; aircraft characteristics and performance; aircraft nose; navigation and air traffic control; airport planning and design; air transportation policy, aviation system planning. (F) Hansen, Kanafani

261. Transportation Infrastructure Management. (3) Three hours of lecture per week. Prerequisites: Consent of instructor. Integrated treatment of analytical methods and technologies for management of transportation facilities over their life. Condition surveys, sampling and inspection considerations. Performance models development and application. Agency costs and user impacts. Management of transportation system design. Relevant methodologies. (F) Daganzo, Hansen, Madanat

262. Analysis of Transportation Data. (3) Three hours of lecture per week. Prerequisites: Consent of instructor. Data analysis techniques. Sources of errors, considerations of sample size. Experiment design for demand forecasting and transportation operations analysis. Analysis techniques. (F) Daganzo, Hansen, Madanat

263. Operations of Transportation Terminals. (3) Three hours of session per week. Prerequisites: Grad- uate standing or consent of instructor. Probabilistic models in transportation. The use of field data. Data gathering techniques, sources of errors, considerations of sample size. Experiment design for demand forecasting and transportation operations analysis. Analysis techniques. (F) Daganzo, Hansen, Madanat

265. Traffic Safety and Injury Control. (3) Three hours of lecture per week. Prerequisites: 262 or equivalent. Formerly C291A. This course applies principles of behavioral, environmental, and biological sciences to preventing traffic collisions and subsequent injury. A systematic approach to traffic safety will be presented in the course, and will include (1) human behavior and design of vehicles and roads, (2) interaction of factors which affect traffic crashes and their consequences, (3) the role of the engineer in preventing traffic crashes and (4) vehicle and roadway designs as approaches to preventing injury once a collision has occurred. Implications of intelligent transportation system concepts for...
traffic safety will be discussed throughout the course. Also listed as Public Health C285. (SP) Ragland

266B. Marketing and Management of International Construction and Engineering. (3) Three hours of lecture per week plus individual meetings with students. Prerequisites: Graduate standing in Engineering, Architecture, or Business School. Business development by engineers and contractors with emphasis on the international market. Development of skills in communication, contracts and negotiations. Management of international projects, including investigation, planning, procurement, logistics, personnel and financing. Special problems of adverse environments. (SP) Gerwick

267B. Advanced Concrete Construction. (3) Three hours of lecture per week. Prerequisites: 123. Utilization of concrete in construction; lightweight, high strength, and architectural concrete. Uses of admixtures and processes for resolving problems associated with field processing of concrete. Application to buildings, bridges, pressure vessels, and pollution control structures. Staff

267F. High-Tech Building and Industrial Construction. (3) Three hours of lecture per week. Prerequisites: Graduate standing or consent of instructor. Introduces the mechanical and electronic systems that define functionality and affect life-cycle costs of facilities. Focus on “smart” buildings and “high-tech” industrial projects. Describe terminology, engineering, architectural components, and materials. Perform design calculations. Stress construction and installation methods. Discuss contractual relationships and coordination requirements between owners, general contractors, and specialty contractors. (F) Tommelein

268E. Civil Systems and the Environment. (3) Three hours of lecture per week. Prerequisites: 166 or 167 or equivalent. Methods and tools for economic and environmental analysis of civil engineering systems. Focus on costs and benefits, and maintenance of the built infrastructure. Life-cycle planning, design, costing, financing, and environmental assessment. Industrial ecology, design for environment, pollution prevention, external costs. Models and software tools for life-cycle economic and environmental inventory, impact, and improvement analysis of civil engineering systems. (SP) Horvath

C268F. Risk Assessment and Management of Technology. (3) Three hours of lecture per week. Provides students with a broad-based understanding of primary principles, considerations, and multidisciplinary approaches to assessing and managing risks associated with technologies. Technologies include all means employed to provide objects and processes necessary for human sustenance, productivity, entertainment, health, and comfort. Quantitative and qualitative risk analysts these strategies employed: proactive, reactive, and interactive modes will be addressed. Also listed as Ocean Engineering C268F. (SP) Bea, Roberts

268H. Advanced Project Planning and Control. (3) Three hours of lecture per week. Prerequisites: 167. Cost and time estimating and controlling techniques for projects. Evaluation of labor, material, equipment, and subcontract resources, scheduling techniques, earned value concepts. Measuring project percent complete. Contractual risk allocation. Project investment analysis techniques. (F) Ibbs

268I. Business Fundamentals for Engineers. (3) Three hours of lecture per week. Prerequisites: 167 or equivalent. Course will provide a broad survey of management theory and practice including the operation and management of a business in the engineering and construction industries. Topics that are covered include the entrepreneurial process; organizing and staffing; establishing and evaluating control systems and means of protecting products and services from competitive threat; and financial management. (SP) Ibbs

270A. Soil Mechanics. (3) Three hours of lecture per week. Prerequisites: 175 or equivalent. Advanced treatment of topics in soil mechanics, including mixed boundary conditions, methods of means of protecting products and services from competitive threat; and financial management. (SP) Ibbs

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 earth pressure theories, interaction of foundation and superstructure, long-term and short-term performance criteria, ground improvement for foundation support, analysis and design of shallow and deep foundations. (F) 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 (concurrently), or consent of instructor. Lectures and experimental studies of advanced aspects of soil property measurement with application to analysis and design. Three hours of lecture per week. (SP) Bray, Pestana

271. Elastic Signal Interpretation for Engineering Material Characterization. (3) Three hours of lecture per week. Prerequisite: Graduate standing or consent of instructor. Develop understanding of wave propagation and signal processing needed to rationally interpret system transient response and evaluate properties of engineering materials. Study of wide range of wave types and vibrations, damping, filters—analogy and digital, time vs. frequency domain analysis, spectral estimation—Fourier and Stochastic approaches, system identification. (SP) Riemer, Seed

272. Numerical Modelling in Geomechanics. (3) Three hours of lecture per week. Prerequisites: Graduate standing or consent of instructor. Constitutive laws for geotechnical materials including inelastic hypoplastic and elasto-plastic Cam-clay; soil behavior and critical state mechanics; and soil finite element analysis. Study 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: 175, 175, or equivalents. Geotechnical practice in environmental protection and restoration. Methods of soil and site characterization for siting of waste repositories and site restoration. Influence of physical and chemical processes on the evaluation of contaminant distribution. Design of waste containment systems including landfills, slurry walls, and soil stabilization; the application of geotechnical and environmental engineering methods to site restoration and cleanup. (SP) Sitar

275. Geotechnical Earthquake Engineering. (3) Three hours of lecture per week. Prerequisites: 175 or equivalent, or consent of instructor. 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 mitigation 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: 175 or equivalent. A course in physical geology. Influence of geologic origin and history on the engineering characteristics of soils and rocks. Application of geology in exploration, design, and construction of engineering works. (F) Sitar

285A. Electrical and Electromagnetic Methods in Applied Geophysics. (3) Students will receive no credit for 285A after taking Mineral Engineering 233 before Fall 2001. Three hours of lecture per week. (F) Bray, Staff

285C. Seismic Methods in Applied Geophysics. (3) Students will receive no credit for 285C after taking Mineral Engineering 236 before Fall 2001. Three hours of lecture per week and two field trips. Prerequisites: C236. Formerly Mineral Engineering 236. 285C. This course will give an overview of seismological methods used for data acquisition, processing, and interpretation of seismic data are discussed, with application to petroleum production, environmental site characterization, earthquake engineering, and groundwater. (SP) Rector

286. Digital Data Processing. (3) Students will receive no credit for 286 after taking Mineral Engineering 240 taken before Fall 2001. Three hours of lecture per week. Prerequisites: Consent of instructor. Formerly Mineral Engineering 240. Considerations for digital computer techniques and the State of the Art in digital data processing and interpretation. (SP) Rector

C290A. Human and Organizational Factors: Risk Assessment and Management of Engineered Systems. (3) Three hours of lecture/discussion per week. Prerequisites: Graduate standing. Design engineering associated with achieving desirable quality (serviceability, safety, durability, compatibility) and reliability of engineered systems. Approaches to improve quality and reliability are advanced: proactive, reactive, and interactive (real time) strategies and measures. Also listed as Ocean Engineering C290A. (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 organic contaminants in wetlands. Features of Apportionment forms, convolution and correlation. Discrete linear systems, Z transforms. Digital processing of seismic reflection data, deconvolution and migration. Introduction to 3-D seismic data. (F) Bray

C290A. Human and Organizational Factors: Risk Assessment and Management of Engineered Systems. (3) Three hours of lecture/discussion per week. Prerequisites: Graduate standing. Design engineering associated with achieving desirable quality (serviceability, safety, durability, compatibility) and reliability of engineered systems. Approaches to improve quality and reliability are advanced: proactive, reactive, and interactive (real time) strategies and measures. Also listed as Ocean Engineering C290A. (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 organic contaminants in wetlands. Features of Apportionment forms, convolution and correlation. Discrete linear systems, Z transforms. Digital processing of seismic reflection data, deconvolution and migration. Introduction to 3-D seismic data. (F) Bray

290D. Earthquake Hazard Mitigation. (3) Three hours of lecture per week. Prerequisites: 225, 131 or 231. Conceptual basis for seismic isolation and energy absorbing techniques. Design rules for seismic isolation systems. Mechanical systems. Characteristics of frictional, metallic and polymeric energy absorbing devices. Guidelines for use of isolation systems and devices and impact of code requirements. Offered odd-numbered years. (F) Mahin, Makris

290F. Advanced Topics in Seismology. (3) Course may be taken for credit or for audit. Three hours of lecture per week. Prerequisites: Introductory course in seismology; 286 or Mineral Engineering 240. Formerly Mineral Engineering 290F. Active areas of research in applied seismology. Subjects include: anisotropic and viscoelastic wave propagation, borehole seismology, crosswell seismology, including crosswell seismic tomography, vertical seismic profiling, reservation mining including passive seismic methods. (SP) Rector

290G. Advanced Topics in Potential and Electrodynamic Fields and Inversion. (3) Course may be repeated for credit with consent of instructor. Three hours of lecture per week. Prerequisites: 285A, Physics 110A-110B or equivalent and an introductory course in geology. Formerly Mineral Engineering 290D. Theory of fields satisfying Laplace’s equation (dc electric, magnetic, and gravity) and the Helmholtz equation (electromagnetic). The physical basis of grav-
ity and magnetic surveying. Fundamental properties of electromagnetic fields above, on and within layered media for plane wave, line, and dipole sources. Time and frequency domain solutions with finite difference, finite element, and integral equation techniques. Inverse problems will emphasize recent developments and new research directions. (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 will follow the process of discovering and evaluating a reservoir. Weekly topics include data collection, seismic survey, design, drilling, and completing a discovery well; logging, testing, delineation of the reservoir, estimation of reserves, production planning, and economic analysis. Extensive use is made of computer simulation. (F) (G) Cooper, Patzek

290L. Civil Systems: Control and Information Management. (3) Three hours of lecture per week. Prerequisites: Graduate standing or consent of instructor. Mathematical methods and information technologies for controlling complex systems. Emphasizes designing component organizations 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. (SP) Sengupta

290J. Advanced Topics in Geotechnical Engineering. Three hours of seminar per week. Prerequisites: Graduate standing in Geoen- gineering. Advanced treatment of developing areas of geomechanics and geotechnical earthquake engineering, including the development of generalized non-linear soil constitutive models, new developments in soil dynamics and geotechnical earthquake engineering, soil improvement, geosynthetics and earth structures, and earthquake catastrophies of geotechnical systems. Offered even-numbered years. (F,SP) Bray, Pestana, Seed

290K. Law for Engineers. (3) Three hours of lecture per week. Engineering involves many parties with divergent interests. Legal principles form the framework for their interactions. Contracts for engineering services establish both risk allocation and reciprocal liabilities. Issues of contract formation, performance, breach, and remedy are covered in detail. Standard of care and professional responsibility are highlighted through the discussion of tort law. Other topics include regulation, legal relationships, litigation, and alternative dispute resolution. (F) Hillman

290L. Improving Performance in Engineering and Construction. (3) Three hours of lecture per week. Prerequisites: Graduate standing in Civil and Envi- ronmental Engineering and consent of instructor. Students will understand the potential for, and obstacles to, improving performance. Will learn which data provoke and support positive change; how to collect that data, and how to use the data to improve processes that have been 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 construction expertise from the working professionals. Emphasis will be placed on the potential for, and obstacles to, improving performance. Will learn which data provoke and support positive change; how to collect that data, and how to use the data to improve processes that have been adopted will be that of the consultant. (F) Ballard

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. Ad- vanced strategies for managing complex projects in all phases of activities starting with concept development, through engineering design, procurement, construction and operational startup. Project economics and finance are given special attention. (F) McDonal
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 undergraduates to read major works of ancient literature in the original languages and to give a general understanding of 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, 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 10B or the Greek Workshop), offered during Summer Sessions; Greek 40 (may be taken concurrently with upper division courses); Greek 100, 101, and 110; four courses chosen from Greek 115-123. Greek 100 to 110 may be in exceptional circumstances, the undergraduate adviser may authorize substitution of Classics 100A for 101 and 102; 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 115-140; Classics 10A and 10B (under exceptional circumstances, the undergraduate adviser may authorize substitution of Classics 100A 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); 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 115-140; 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 other departments.
(c) Area of concentration: Five courses (at least three upper division courses in the Classics department) in one of the following areas of concentration: Classical 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); (five Greek courses including up to two lower division), Latin Language (five Latin courses including up to two lower division).
(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 without duplication from the 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 110, 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 the Greek, Latin, and classical languages majors that at least one of the Senior Reading courses (Classics 115-123) 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 H199 (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 Classics department. 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 courses from Classics 100A, 100B, 121, 130, 132, 155A, 155B, 163, 170, 175, 178, 180, Greek 100-102, 105, 115-123, Latin 100-102, 115-123, 140, 155. 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 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 the Latin language; 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 a satisfactory equivalent). For those desiring only a master’s degree in Greek or Latin, the core responding 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 level upper division courses; Greek 115-123, Latin 115-123. They are strongly advised also to have an adequate reading knowledge of French and German by passing examinations in both the Ph.D. degree, and in one of them for the M.A. degree. Prospective graduate students are also encouraged to take Advanced Prose Composition in Greek (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 prepare themselves with every field of classical study. Students are advised to read widely in Greek and Latin authors of all kinds since 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 may be taken for either 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 contradictions in Greek culture from the Bronze Age to the 4th century BCE. Key works of literature, history, and philosophy (read in English translation) will be examined in their social and political 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 the early Republic to the High Empire. Key sources for literature, history, and material culture are studied in order to reveal Roman civilization in its political 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 disc...
cussion per week. The physical remains of the Greek world from the Bronze Age to 323 BCE will be studied, with emphasis on its artistic triumphs, 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. (F,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. 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 meaning of the stories 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 (from 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 Greek and Roman magical practices. 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/discussion per week. Introduction to the philosophies of Socrates, Plato, and Aristotle. (F,SP)

C36. 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 origins and development of philosophy in the Greek world from the Presocratics through the fourth century BCE. Special attention given to Socrates, Plato, and Aristotle. Post-fourth century, Hellenistic philosophies (especially Stoicism, Cynicism, Epicureanism, and neo-Platonism) and their survival into the modern world are treated more briefly. Also listed as Philosophy C25A. (F,SP)

39. Freshman/Sophomore Seminar. Course may be repeated for credit as topic varies. Seminar Format. Prerequisites: 1-2, 10, or 15. Sophomore and Freshman 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)

84. Sophomore Seminar. (1,2) Course may be repeated for credit as topic varies. One hour of seminar per week. Sections 1-9 to be graded on a passed/not passed basis. 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 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 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 senior honor 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)

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)

121. Ancient Religion. (4) Course may be repeated for credit 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. (F,SP)

124. Classical Poetics. (4) Three hours of lecture per week. Study of a selection (in English translation) of the most important works of classical antiquity that concern literature and the works of some post-classical authors who wrote on similar themes under the influence of their classical predecessors. Authors studied may include Plato, Aristotle, Horace, Longinus, Augustine, Sidney, Pope, and Lessing. (F,SP)

130. Topics in Ancient Greek and Roman Culture. (4) Course may be repeated for credit. Three hours of lecture per week. Prerequisites: Upper division status. Topic to vary from year to year. No knowledge of Greek or Latin required; but provision will be made for students who wish to study some of the readings in the original language. Enrollment limited. (SP)

161. 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)

163. Topics in Greek Philosophy. (4) Course may be repeated for credit with consent of instructor. Three hours of lecture per week. Prerequisites: 3, 8, or Philosophy 25 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; ancient philosophical, neo-Platonism. (SP)

170. Classical Archaeology. Three hours of lecture per week. (F,SP)

170A. Greek Vase Painting. (4)

170B. Greek Sculpture to 400 BCE. (4)

170C. Greek Architecture. (4)

170D. Roman Art and Architecture. (4)

175. Topography and Monuments. Three hours of lecture per week. (F,SP)

175A. Athens. (4)

175B. Rome. (4)

175C. Sanctuaries of Greece. (4)

175D. Pompeii and Herculaneum. (4)

175F. Roman Wall Painting. (4)

180. Ancient Athletics. (4) Three hours of lecture and one hour of discussion per week. Study of ancient athletics and athletes including athletic training, facilities, competitions, and the role of athletics in Greek and Roman society. (F)

H195. Honors Course in Classical Civilization. (4) Three hours of work per week per unit. Prerequisites: Appropriate 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 Classical Languages or Classical Civilizations 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)

196. 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)

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 honor students. (F,SP)

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)

40. 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 freshmen and sophomores; consent of instructor; 3.3 overall GPA. (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, Lyssias); some review of grammar. (F)

101. Homer. (4) Three hours of lecture per week. Prerequisites: 1-2, 10, or 15. Major readings in the Iliad or Odyssey. (SP)

120. 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 periods.

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: 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 Greek major; the work will result in the writing of a thesis, to be evaluated by an honors committee of three members. Written theses due the Monday of the 13th week of the semester in which the course is taken. (F,SP)

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 used in fulfillment 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 theses 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)

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 honor 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)

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)

155A-155B. 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 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 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 theses due the Monday of the 13th week of the semester in which the course is taken. (F,SP)

180. 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 proseminar (Classics 200) is prerequisite to all graduate seminars; this requirement does not apply to graduate courses that are not seminars. Namely, Classics 201A-201B, 202A-202B, 221, 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; 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; 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, toponymy, epigraphy, geomorphology, numismatics. (F,SP)

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. Four units to be graded on a letter-grade basis. Prerequisites: 200. Formerly 210A-B. Homer, Hesiod, or other topics in hexameter poetry.

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. 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.
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. Four units to be graded on a letter-grade basis. Prerequisites: 200. For men and women. (Psychology)

216. Greek Historians. (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 238B. Study of social, legal, or administrative structures of the Greek or Roman world. (Psychology)

219. Ancient Novel. (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. Study of Greek novels, Petronius, Apuleius, or other topics in Greek-Roman romance or novel. (Psychology)

220A-220B. Greek and Latin Epigraphy. (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: 200. A Kyriakos ephigrapheis. (Psychology)

221. Greek Psychology. (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. Prerequisites: 200. Ancient reflections on the soul, consciousness, and various aspects of mental life, especially constructs of the self. (Psychology)

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 reconstruction as 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 legal texts will be compared. (Psychology)

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. (Psychology)

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 investigating historical issues to which the papyrological corpus may contribute (the ancient economy, gender in antiquity, education, etc.). Extensive use will be made of Berkeley’s outstanding collection of papyri from Tebtunis. (Psychology)

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 Greco-Roman world. (Psychology)

228. 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. (Psychology)

229. Ancient Religion. (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. Study of cults and rituals with relevant respects of Greek or Roman religion or both, such as sacrifice, purification, cult and literature, hero cult, politics and religion, and life after death. (Psychology)

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 230A-G. Study of Lucretius, Vergil, Horace, Ovid, or other topics in Latin poetry from Ennius to Juvenal. (Psychology)

233. 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. Select problems in Roman imperial literature and history from 69-235 CE. (Psychology)

240. Greek and Roman Literature 100-500 A.D. (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. Topics in the literature of the 2nd through 5th centuries. (Psychology)

241. Latin Literature of the Middle Ages. (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. (Psychology)

242. Latin Literature of the Middle Ages. (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. Consent of instructor. Graduate readings in Medieval Latin with attention to the evolution of literary forms and genres from Late Antiquity to the close of the Middle Ages. Students who take the course for 2 units must enroll on a satisfactory/unsatisfactory basis. Students who take it for 4 units must enroll for a letter grade. Also listed as Medieval Studies C241. (Psychology)

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. (Psychology)

251. Greek Dialects. (2,4) Three hours of lecture per week. Two units to be graded on satisfactory/unsatisfactory basis. Four units to be graded on letter-grade basis. Prerequisites: Graduate status or permission of instructor. The emphasis will be on epigraphical rather than literary texts. Among topics included will be introduction to the study of dialectology, interrelations of the various dialects, and development of the dialects in postclassical times. (Psychology)

260. 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. (Psychology)

Philosophy

Students concentrating in Philosophy must take Philosophy 132 and two other courses, at least one of which must come from the core courses list: Philosophy 128, 130, 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.

Honors Program

Students concentrating in Cognitive science majors who wish to graduate with honors must have an overall grade-point average of 3.30 or higher in all work for the University and a 3.50 grade-point average or higher in the major program at the time of their graduation. In addition, they must complete a thesis of high quality, based upon independent research in a methodological study with a member of the Philosophy 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 349 Campbell Hall, (510) 642-2628.

Lower Division Courses

C1. Introduction to Cognitive Science. (4) Three hours of lecture and two hours of laboratory per week. Three hours of lecture and one hour of discussion per week. Offered every semester. Enrollment limited to 15 sophomores. Prerequisites: Psychology 101, formerly 100.

C124. Psycholinguistics. (3) Three hours of lecture and one hour of discussion per week. Prerequisites: Computer Science 61B. Also listed as Psychology C124. Students concentrating in Linguistics must take Psychology 101 or Psychology/Cognitive Science C108. This course will examine the nature of human consciousness. Also listed as Linguistics C108. G. Lakoff

C125. The Mind and Language. (4) Three hours of lecture and one hour of discussion per week. Prerequisites: Philosophy 132 or Psychology 132 or Psychology 138 or 139 or 140 or 141 or 142 or 143 or 144 or 145. This course will examine the nature of human consciousness. It will cover topics from the philosophy of mind, cognitive linguistics, neuroscience, psychology, and computational models. Also listed as Psychology C125.

C126. Perception. (3) Three hours of lecture and one hour of discussion per week. Prerequisites: Philosophy 132 or Psychology 132 or Psychology 138 or 139 or 140 or 141 or 142 or 143 or 144 or 145. This course will examine the nature of human consciousness. It will cover topics from the philosophy of mind, cognitive linguistics, neuroscience, psychology, and computational models. Also listed as Psychology C125.

C127. Introduction to Psycholinguistics. (4) Three hours of lecture and one hour of discussion per week. Prerequisites: Psychology 101, formerly 100. This course introduces the interdisciplinary field of psycholinguistics. Lectures and readings will survey research from artificial intelligence, psychology, linguistics, philosophy, and neuroscience, and will cover topics such as the nature of 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. Offered every semester. Prerequisites: Computer Science 1B or 1B/2B or 1B/2B/2A or C. Also listed as Psychology C124.

Upper Division Courses

C100. Basic Issues in Cognitive Science. (4) Students will receive no credit for C100 after taking Psychology 120A. Three hours of lecture and one hour of discussion per week. Formerly 100. Theoretical foundations and current controversies in cognitive science will be discussed. Basic issues in cognition—including perception, memory, categorization, thinking, judgment, and development—will be considered from the perspectives of philosophy, psychology, computer science, and biology. Particular emphasis will be placed on the nature, implications, and limitations of the computational model of mind. Also listed as Psychology C102.


Prerequisites: C1 or Psychology 1 or Psychology 120A or Psychology 120B or C100. This course will examine the nature of human consciousness. 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 mind, the cognitive unconscious, and metaphysical 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, Aristotle, Kant, and analytic philosophy (especially Quine), and Chomsky. Also listed as Linguistics C108. G. Lakoff

C110. The Neural Basis of Thought and Language. (4) Three hours of lecture and one hour of discussion per week. Prerequisites: Computer Science 61B; and C101, Linguistics C105 or C100, Psychology C120B; or consent of instructor. This course is on the current status of interdisciplinary studies that seeks to answer the following questions: (1) How is it possible for the brain, which consists of the processing 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 systems? (3) How do social cognitive and 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 mechanism, using models and simulations of language and learning phenomena. Also listed as Computer Science C182 and Linguistics C109. (SP) Feldman, G. Lakoff

Prerequisites: Consent of instructor. Psych 101 recommended. An introduction to the theoretical core concepts and essential procedures in visual and auditory perception. Topics will include psychophysics; perception of color, space, shape, and motion; pattern recognition and perceptual attention. Also listed as Psychology C126.
Program Overview

College Writing Programs, a unit within the Division of Undergraduate and Interdisciplinary Studies 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: Upper division standing and consent of instructor. This seminar will cover the study of normal cognitive processes in humans with non-invasive brain-imaging and physiological techniques (e.g., PET scan, brain waves), and computer modeling. Topics to be covered include visual perception and object recognition, attention, motor control, language, and development. Also listed as Psychology C127.

199. Supervised Independent Study. (1-4) Course may be repeated for credit. Must be taken on a passed/not passed basis. Prerequisites: Upper division standing and consent of instructor. Seminar for the group study of selected topics. Topics may be initiated by students subject to the approval of the major advisor. (F,SP)

151. Introduction to Principles of Professional Communication. (3) Three hours of lecture per week. Prerequisites: Completion of reading and composition requirement (1A or 1B) and consent of instructor. This course will focus on key principles and rhetorical strategies of writing texts in non-academic settings. Although the course may address issues of oral communication, the primary focus will be on written communication. The readings will focus on the rhetoric of instructors and students who use the essay as a cultural tool to challenge the foundations of the time and place in which they live. (F,SP) Cole

199. Supervised Independent Study. (1-4) Course may be repeated for credit. Must be taken on a passed/not passed basis. Prerequisites: Consent of instructor, upper division standing. Independent study in topics not covered by regularly scheduled courses. Course must initiate topic and present a written proposal. (F,SP) Staff

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, and will review relevant pedagogical issues, and will assist under-graduate students in mastering their initial teaching experiences. (F,SP)
Comparative Biochemistry

(Interdepartmental Graduate Groups)

http://combiochem.berkeley.edu/

Chair: Jack Kirsch, Ph.D.

Graduate Courses

294. Comparative Biochemistry Seminar. (1) Course may be repeated for credit. One hour of seminar per week. Must be taken on a satisfactory/unsatisfactory basis. The objective of this course is to provide an overview of the research conducted by faculty members of the 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 intellectual 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 Graduate 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 for one unit. Research in the Comparative Biochemistry Graduate Group. Graduate student research. (F,SP) Staff

Comparative Literature

(College of Letters and Science)

Department Office: 4125 Dwinelle Hall, (510) 642-2712 http://complit.berkeley.edu

Chair: Eric Naiman, Ph.D.

Professors

Robert Alter, Ph.D. Harvard University. Modernism, Hebrew literature, modern and biblical (Near Eastern Studies). Michael André Bernstein, D.Phil. Oxford University. Literary theory, history and literature, modernism, prosaics (English)

Judith Butler, Ph.D. Yale University. Philosophy, social and political thought, feminist theory (Rhetoric)

Barbara Spacks, Ph.D. Harvard University. Modern period, gender studies, novel (Classics)

Kathleen McCarthy, Ph.D. Princeton University. Roman poetry, epic poetry, romance; textual criticism (French).

Leslie V. Kurke, Ph.D. Princeton University. Greek literature and culture, comedy (Classics)

Laurel Snow, Ph.D. Stanford University. Comparative romanticisms, lyric poetry (English)

Jesse K. Y. Wat, Ph.D. University of Chicago. American literature (English)

Requirements: Lower Division. There are no lower division requirements beyond the completion of the Letters and Science reading and composition requirements 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 41 series (Introduction to Literary Forms) 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 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 not fewer than 12 units, with readings in the original language and selected to demonstrate broad historical coverage in that literature; (3) at least two courses in the "minor" literature totaling not fewer than 6 units, with readings in the original language and selected to fit the student's period of primary interest (e.g. classical, medieval, early modern, modern, etc.); (4) at least one upper-division undergraduate course in a classical literature, where works are read in translation or in the original from Greek, Latin, Classical Hebrew, Sanskrit, or Classical Chinese. Note that, although only two literatures (for example, English-French) are required for the A.B. degree, adequately prepared students, especially those who do not subsequently undertake graduate studies, 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 course work, a sense of the historical development of the 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 encouraged to consult the advisor in the Department of Comparative Literature at their earliest opportunity.

Modern Greek

See 112A (Modern Greek language), 112B (Modern Greek composition). 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 provides students for teaching and 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. The program emphasizes 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 vice office of graduate studies in the Department of Comparative Literature.

Undergraduate Preparation. Students interested in the graduate program in comparative literature at Berkeley should plan their undergraduate preparation in at least two foreign languages which 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 some M.A. course work toward the 10-course requirement.) Students must demonstrate competence in three languages other than English, including one classical language. Courses include Approaches to Comparative Literature, as well as graduate-level 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 three literatures in a comparative context and are based on reading lists and a statement of interests drawn up by the student in consultation with an advisor.

Students are encouraged to complete these examinations no later than the fourth year of study and to devote the following two years to the development of a prospectus and the completion of a doctoral dissertation. Committees are ordinarily 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 plus individual conferences. Prerequisites: Subject A examination or course. 1A or equivalent is formerly 1A. Expository writing based on readings of selected masterpieces of ancient and modern literature. Limited to 10 qualified freshmen and/or sophomores who meet for roundtable discussions and attend weekly tutorial sessions. Individual assignments provide each student with the opportunity to exploit his or her linguistic and literary training.

R1A-R1B. English Composition in Connection with the Reading of World Literature. (4,4) Three hours of lecture per week plus individual conferences. Prerequisites: Subject A examination or course. 1A or equivalent is formerly 1A. Expository writing based on analysis of selected masterpieces of ancient and modern literature. Students planning to take the professional exam in the fall of the junior year should take one of these courses. Limited to 10 qualified freshmen and/or sophomores who meet for roundtable discussions and attend weekly tutorial sessions. Individual assignments provide each student with the opportunity to exploit his or her linguistic and literary training. Course satisfies the first half of the Reading and Composition requirement, and H18 satisfies the second half.

R2A-R2B. English Composition in Connection with the Reading of World Literature. (5,5) Five hours of lecture per week. Prerequisites: Three years of high school French or two years with a B plus average. Formerly 2A. Expository writing work in connection with the reading of masterpieces of ancient and modern literature. Students planning to take the professional exam in the fall of the junior year should take one of these courses. Limited to 10 qualified freshmen and/or sophomores who meet for roundtable discussions and attend weekly tutorial sessions. Individual assignments provide each student with the opportunity to exploit his or her linguistic and literary training. Course satisfies the first half of the Reading and Composition requirement, and R1B satisfies the second half.

R3A-R3B. English Composition in Connection with the Reading of World Literature. (5,5) Five hours of lecture per week. Prerequisites: Three years of high school Spanish or two years with a B plus average. Expository writing work in connection with the reading of masterpieces of ancient and modern literature and the study of selected Spanish texts read in the original. Course will prepare students for more advanced work in French. R2A satisfies the first half of the Reading and Composition requirement, and R2B satisfies the second half.

R4A-R4B. English Composition in Connection with the Reading of World Literature. (5,5) Five hours of lecture per week. Prerequisites: Three years of high school French or two years with a B plus average. Expository writing work in connection with the reading of masterpieces of ancient and modern literature and the study of selected Spanish texts read in the original. Course will prepare students for more advanced work in Spanish. R3A satisfies the first half of the Reading and Composition requirement, and R3B satisfies the second half.

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. Prerequisites: At discretion of instructor.

230B. Seminar in World Literature. (4) Three hours of discussion per week. Prerequisites: Consent of the instructor. Exploration in seminar format, of a topic in world literature with round table discussions and individual assignments. Limited to 15-20 students with freshman and/or sophomore standing.

38. Freshman/Sophomore Seminar. Course may be repeated for credit as topic varies. One hour of seminar per week. Sections 1 to 2 to be graded on a passed/not passed basis. Prerequisites: All sections 2-10 to be graded on a letter-grade basis. Freshman/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)

40. Women and Literature. (4) Course may be repeated for credit as topic varies. Three hours of lecture per week. A study of women as portrayed in literature, and of women writers. Selected readings on a topic which varies from semester to semester, with detailed consideration of both literary techniques and the problems of women.

41. Introduction to Literary Forms. Three hours of lecture per week. Comparative study of masterpieces of world literature.

41A. Forms of the Epic. (4)

41B. Forms of the Lyric. (4)

41C. Forms of the Novel. (4)

41D. Forms of the Drama. (4)

41E. Forms of the Cinema. (4)

41F. Forms of Literary Theory. (4)

50. Creative Writing in Comparative Literature. (3) Course may be repeated for credit. Three hours of lecture/discussion per week. A creative writing workshop for students who wish to study the theory and practice of writing as they work in a variety of forms and media.

60AC. Topics in the Literature of American Cultures. (4) Course may be repeated for credit. Three hours of lecture/discussion per week. A study of the ethnic diversity of American literature. Topics will vary from semester to semester, but may include such themes as Cultures of the City, Gender, Race, Ethnicity in U.S. Literature, Race and Identity. Students should consult the department's course bulletin well before the beginning of the semester for details. 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 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 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 closer mentorial 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 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.

Upper Division Courses

100. Introduction to Comparative Literature. (4) Course may be repeated for credit as topic varies. Three hours of lecture per week. Prerequisites: One upper division literature course in a foreign language or consent of the instructor. An introduction to problems of the comparative study of literature and
culture. Emphasis on principles of comparative methods and analysis with focus on selected literary, critical, and theoretical texts from antiquity to the present. Readings in English and at least one foreign language. (F,SP) Staff

112A-112B. Modern Greek Language and Modern Greek Culture. (4A) Three hours of lecture per week, one hour of discussion per week. Modern Greek pronunciation, vocabulary, grammar and syntax studied. The forms of writing (prose, poetry, drama) and the reading of literary texts as auxiliary to the acquisition of compositional skills. (F,SP)

120. The Biblical Tradition in Western Literature. (4) Three hours of lecture per week. Examination of selected aspects of the Biblical tradition and their relevance to the study of later literature.

151. The Ancient Mediterranean World. (4) Three hours of lecture per week. Prerequisites: Upper division standing or consent of instructor. Graduate students wishing to take this course are required to go back to the original Hebrew, Greek, or Latin texts. The literature of the ancient Near East, Rome, the classical periods, and other ancient civilizations of the Mediterranean basin.

152. The Middle Ages. (4) Three hours of lecture per week. Prerequisites: Upper division standing or consent of instructor. Graduate students wishing to enroll must know at least one foreign language relevant to the materials studied. The literature of the Middle Ages.

153. The Renaissance. (4) Three hours of lecture per week. Prerequisites: Upper division standing or consent of instructor. Graduate students wishing to enroll must know at least one foreign language relevant to the materials studied. European literature of the Renaissance.

154. Eighteenth- and 19th-Century Literature. (4) Three hours of lecture per week. Prerequisites: Upper division standing or consent of instructor. Graduate students wishing to enroll must know at least one foreign language relevant to the materials studied. Literature of the 18th and 19th centuries.

155. The Modern Period. (4) Course may be repeated for credit with consent of instructor. Three hours of lecture per week. Prerequisites: Upper division standing or permission of the instructor. Graduate students wishing to enroll must know at least one foreign language relevant to the materials studied. Literature of the 19th and 20th centuries.

156. Fiction and Culture of the Americas. (4) Three hours of lecture per week. Comparative study of American (Native-American, Spanish-American, Caribbean, and Brazilian literature and culture. Readings chosen to illustrate diverse attitudes of Americans toward their culture, politics, and environment.

C159. 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 English translations and original works in English. 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 South Asian C122. (F,SP)

165. Myth and Literature. (4) Three hours of lecture/discussion per week. Study of the earliest myth texts and the development of the growth of literary forms of myth to the present day. Myth and oral composition. Emphasis on the meanings of myth as reflected in varying idioms.

170. Special Topics in Comparative Literature. (1-4) Course may be repeated for credit with different topics and departmental consent of instructor. One to four hours of lecture per week. An independent studies course designed to fulfill a need intrinsic to the undergraduate major's program which cannot otherwise be satisfied because it involves either a literature not covered in regularly scheduled course offerings or a special methodological framework or bias of selection.

185. Gender, Sexuality, and Culture. (4) Course may be repeated for credit with consent of instructor. Three hours of lecture/discussion per week. Comparative study in gender, feminism, sexuality in various national literatures and cultures. Topics will vary from year to year.

190. Senior Seminar in Comparative Literature. (4) Course may be repeated for credit with consent of instructor. Three hours of lecture/discussion or three hours of seminar per week. Prerequisites: Senior standing, 100 and one course from the 151-159 series (the latter may be taken concurrently). Seminar-style treatment of a major topic in Comparative Literature. Substantial paper required. (F,SP)

H195. Honors Course. (1-4) Course may be repeated for credit. Hours to be arranged. Prerequisites: Honors standing, 8 units in upper division literature courses, including 100 or the equivalent, and knowledge of a vernacular language or a classical language. Preparation and writing of an honors thesis under the supervision of a member of the faculty. (F,SP)

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. Group study in a field that may not coincide with that of any regular course and which must be specific enough to enable students to write essays based upon their studies.

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. Enrollment restrictions apply.

Graduate Courses

The following courses numbered 200 through 280 require at least 16 hours per week of effort, including time spent in class and in outside reading and preparation.

200. Approaches to Comparative Literature. (4) Three hours of lecture/discussion per week. Prerequisites: Admission to graduate standing in Comparative Literature. Lectures on literary theory, on the study of criticism, and on the methods of comparative literary theory.

201. Proseminar. (1) One hour of seminar per week. Must be taken on a satisfactory/unsatisfactory basis. Prerequisites: Required for all first year graduate students. This course is designed to give all new 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 experience, issues that pertain to specific fields of research, and questions currently being debated across the profession. The readings for the course will consist of copies of materials by the department’s faculty. (F)

202. Approaches to Genre. Three hours of lecture/discussion per week. Prerequisites: Admission to graduate standing in Comparative Literature: advanced undergraduates may be admitted with the consent of the instructor. Application of the methods of Comparative Literature to the study of genres.

202A. Epic and Saga. (4)

202B. Lyric Poetry. (4)

202D. Dramatic Literature. (4)

210. Studies in Ancient Literature. (4) Three hours of lecture/discussion per week. Prerequisites: Preparation in a field in Greek or Latin and familiarity with at least one modern foreign language. Comparative investigation of a topic in ancient literature between the eighth century B.C.E. and the fourth century C.E. with some attention to subsequent developments.

212. Studies in Medieval Literature. (4) Three hours of lecture/discussion per week. Prerequisites: Preparation in two medieval languages. Comparative investigation of a topic in literature and culture between the fifth and the fourteenth centuries.

215. Studies in Renaissance Literature. (4) Three hours of lecture/discussion per week. Prerequisites: Preparation in two foreign languages. Comparative investigation of a topic in Western literature in the Renaissance period.

223. Studies in the 19th Century. (4) Three hours of lecture/discussion per week. Prerequisites: Preparation in two foreign languages. Comparative investigation of major themes in nineteenth-century literature and culture.

225. Studies in Symbolist and Modern Literature. (4) Three hours of lecture/discussion per week. Prerequisites: Preparation in two foreign languages. Comparative investigation of a topic in contemporary literature and culture.

228. Studies in Contemporary Literature. (4) Three hours of lecture/discussion per week. Prerequisites: Preparation in foreign languages. Comparative investigation of a topic in contemporary literature and culture.

232. Studies in Near Eastern-Western Literary Relations. (4) Three hours of lecture/discussion per week. Prerequisites: Preparation in a Near Eastern or European language. Undergraduate course designed to be committed with consent of the instructor. Comparative investigation of a literary topic requiring the study of both Near Eastern and Western documents.

235. Studies in the Relations Between Classical and Modern Literatures. (4) Three hours of lecture/discussion per week. Prerequisites: Preparation in two foreign languages. Comparative study of the historical and systematic relations between literature and other arts such as the visual arts, music, and film.

236. Studies in Literary Theory. (4) Three hours of lecture/discussion per week. Prerequisites: Preparation in two foreign languages. Comparative investigation of a topic in the theory of literature.


254. Studies in East-West Literary Relations. (4) Three hours of lecture/discussion per week. Prerequisites: Preparation in two foreign languages, one of which must be an East Asian language. Formerly C254. Comparative investigation of a literary topic requiring the study of both East Asian and Western documents.

258. Studies in Philosophy and Literature. (4) Three hours of lecture/discussion per week. Prerequisites: Preparation in two foreign languages. Comparative investigation of a topic in the relationship between philosophy and literature.

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 literary translation project and present it to the class.

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: Preparation in two foreign languages. Comparative investigation of a topic in literature and culture of the modern period.

277. Studies in Contemporary Literature. (4) Three hours of lecture/discussion per week. Prerequisites: Preparation in foreign languages. Comparative investigation of a topic in contemporary literature and culture.

282. Studies in the Relations Between Classical and Modern Literatures. (4) Three hours of lecture/discussion per week. Prerequisites: Preparation in two foreign languages. Comparative investigation of a topic involving the study of ancient and later documents.

284. Studies in the Relations Between Classical and Modern Literatures. (4) Three hours of lecture/discussion per week. Prerequisites: Preparation in two foreign languages. Comparative investigation of a topic in the theory of literature.


286. Studies in Literary Criticism. (4) Three hours of lecture/discussion per week. Prerequisites: Preparation in two foreign languages. Comparative investigation of a topic in literary theory.

288. Studies in East-West Literary Relations. (4) Three hours of lecture/discussion per week. Prerequisites: Preparation in two foreign languages, one of which must be an East Asian language. Formerly C254. Comparative investigation of a literary topic requiring the study of both East Asian and Western documents.

288. Studies in Philosophy and Literature. (4) Three hours of lecture/discussion per week. Prerequisites: Preparation in two foreign languages. Comparative investigation of a topic in the relationship between philosophy and literature.

289. 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 literary translation project and present it to the class.
parative 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 C.A. and are studying for their qualifying examination in Comparative Literature. Discussion on problems of the literature of the period.

298. Special Study. (1-4) 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. Recommended 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. (4-8) 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 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 Individual study 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 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

3605. Methods of Teaching Literature and English Composition. (4) Three hours of lecture/discussion per week. Must be taken on a satisfactory/unsatisfactory basis. Prerequisites: Satisfactory completion of the Master’s 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)

361A. Pedagogical Practice. (4) Course may be repeated for credit. Hours to be arranged. Must be taken on a satisfactory/unsatisfactory basis. Prerequisites: Teaching appointment. Supervised classroom teaching.

Computer Science

(Computer of Letters and Science)

Computer Science Division Office: 387 Soda Hall
http://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 LS 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 people who want an engineering education and do not want to come to Berkeley unless they are guaranteed a CS major. The LS path is appropriate for people who are interested in a broader education in the sciences and arts, 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 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 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.

Stringent 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 determining factor. Students with a high overall and technical GPA (the exact cut-off depends on the demand each year) are routinely admitted. A student may meet the technical GPA cutoff may be admitted on the basis of additional information. Alternatively, early admission will be considered for those students who are in the process of completing six of the eight lower division technical prerequisites for the major with a GPA of 3.7 or above. Included in this group of courses must be CS 61A and CS 61B or CS 61C. Students must submit applications for the major to the Computer Science Advising Office, 377 Soda Hall (510) 642-7214.

Transfer students admitted to Berkeley must, in addition, apply separately to the computer science major. Not all transfer students meet the stringent criteria expected for admission to the major. Therefore, we recommend that transfer students be prepared to pursue an alternative major at Berkeley. For further information, contact the Advising Office.

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.

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 (Math 55) or 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.

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 in the theory of computer science or at www.eecs.berkeley.edu/).
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 grade of B or better is required 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 transcript.

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 course work, including 45 at Berkeley. Junior transfer students must have completed at least 24 units at Berkeley.
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 the exception of the upper division courses, ECE 17 and EE 17 may be used in the total.)
2. Complete 3-4 units of 199 work in CS/ECE or another department where CS is applied. Students may also use CS H196, Undergraduate Research Opportunities (URO) Program or Undergraduate Research Apprenticeship Program (URAP) work. Students must document the completed work in an archival project report. Students are responsible for obtaining 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 except CS majors in EECS. Lower division technical requirements are Math 55, or CS70, CS 61A-61B-61C with a GPA of .2 less than the technical GPA cutoff for admission to the major. Students approved for the minor are given the opportunity to take three upper division CS courses subject to available space, 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. More information may be found at the 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.

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=satisfies American cultures requirement
†Recipient of Distinguished Teaching Award
Professor of the Graduate School
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 course work for the master’s degree for demography is required for the doctoral degree as well. Students already enrolled at a UC campus or at Stanford University are admissible to demography courses if they have completed the prerequisites listed. 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 course work 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 Group 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, typically in one of the social sciences, with specialized training in population studies. Students in the minor must complete, with a grade-point average of at least 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 statistical methods or vital statistics. Similar 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 demographic 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 in all campus departments, 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: Upper division in social science. Demography and anthropology offer very different approaches to the study of birth, death, marriage, and migration. This course examines both the similarities and the differences, exploring these topics first through the two disciplinary

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 morbidity, 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.
lenses separately, and then from an integrated, inter-disciplinary perspective. (F,SP) Johnson-Hanks

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/failed basis. Prerequisites: 60 units; good academic standing. Un-dergraduate 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/failed basis. Prerequisites: Consent of instructor. Supervised independent research. (F,SP)

Graduate Courses

C200. Population and Society. (3) Three hours of seminar per week. Prerequisites: 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 or across populations, effects of global social policies, and demographic changes in different countries. (F,SP) Lee

C236. Aging: Economic and Demographic Aspects. (2) Two hours of lecture per week for seven and one-half weeks. Course considers demographic and economic aspects of population aging. Also listed as Economics C275A. (F,SP)

240. Human Migration. (2) Three hours of lecture for seven and one-half weeks. Human populations analyzed from the standpoint of their spatial distribution and movement. Special attention to rural-urban migration, metropolitan structure, inter-regional movement, and international migration. Also listed as Geography 198. (F,SP) Wachter

250. Mathematical Demography. (2-3) Two hours of lecture per week. Prerequisites: Consent of instructor. This course introduces the fundamental concepts of the study of population dynamics through the use of mathematical models. Demographic and economic aspects of population growth, stable population equilibrium, demographic feedback models, and the effects of migration on population size and structure will be discussed. (F,SP) Staff

256. Fundamentals of Population Theory. (3) Three hours of discussion per week. Prerequisites: Consent of instructor. This course offers an introduction to the foundations of population theory through the close reading of central texts from T.F. Wachter, D. Lee, and J. Lee. The aim is to provide an opportunity for qualified students to prepare themselves for the various examinations required of candidates for the Ph.D. (F,SP) Staff

Development Studies (College of Letters and Science)

Group Major Office: International and Area Studies, 101 Stephens Hall, (510) 642-4446

Major Advisers

Miguel A. Altieri (Environmental Science, Policy and Management) Pranab K. Bardhan (Economics)

Ruth Collier (Political Science)

Deon de Janvry (Agricultural and Resource Economics) Lowell Dittmer (Political Science)

Peter Drakos (Sociology)

Louise Fermian (Environmental Science, Policy, and Management)

Thomas B. Gold (Sociology)

Gillian Hart (Geography)

David Leonard (Political Science)

Thomas R. Melcik (History)

Nancy Peluso (Environmental Science, Policy, and Management)

Robert R. Reed (Geography)

Elisabeth Sadoxet (Agricultural and Resource Economics)

Michael J. Watts (Geography)

Program in Development Studies

Development Studies is the study of social transformation or change. DS students examine the problems, processes, and prospects for the development of human and material resources in what are generally thought to be the less developed areas of the world. The problems of development are urgent, massive, and enormously complex; they cut across the boundaries of conventional academic disciplines. To study comparative development effectively, one must draw upon many disciplines and construct a balanced understanding of history and contemporary processes. Thus, studying development as a social transformation requires a blending of knowledge and perspectives from political science, economics, sociology, psychology, geography, history, and resource and environmental science.

Development studies majors are required to take core courses in development theory and build upon this core with course work focusing on (1) a discipline, (2) a geographic area, and (3) methodological skills appropriate for the student’s primary disciplinary interest. In organizing an undergraduate plan of study, students are advised by staff advisers in the International and Area Studies Teaching Program Office. This DS chair, participating faculty
IA 102 (or IAS 118) must complete a two-semester honors sequence, their undergraduate degrees. In addition, students University course work by the time they complete Development studies, students must obtain a grade-

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; and (2) must not be in their final semester of undergraduate work. Students are reminded that (1) no course work for the major may be taken on a passed/not passed basis, and (2) no course may be used to satisfy more than one major requirement.

Minor. There is no minor program in development studies.

Double Majors. Double majors must be approved by the director of the College of Letters and Science and cannot use more than two upper division courses to satisfy requirements in both majors.

Courses Outside the College of Letters and Science. No more than three courses outside the College of Letters and Science may be used to fulfill major group major requirements.

Honors Program. To graduate with honors in development studies, students must obtain a grade-point average of 3.6 in the major and 3.5 in overall University course work by the time they complete their undergraduate degrees. In addition, students must complete a two-semester honors sequence, IAS 102 (or IAS 118) and DS H195. The honors sequence culminates in the writing of an honors thesis. The thesis is read by the DS H195 instructor and at least one other faculty member who is selected by the student in consultation with the thesis class instructor. Eligibility for participating in the Honors Program may be checked in the Teaching Program Office.

Senior Program. This is an optional program within the major which encourages students to pursue systematically an advanced research project through seminars specifically focused on development topics. DS 130 and 150 are seminar and special topics courses taught by Development Studies Faculty. Other course work in this category may be approved by a faculty adviser.

Course Plan

There is considerable flexibility within DS for students to construct an individual program unique to their specific intellectual and geographic interests. There is, however, a structure built into the major and minimal course requirements that must be met. This structure is designed to provide all DS students with a common knowledge base and intellectual reference points.

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 issues. This 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 methodological requirements; and three area courses. The area courses should focus on a geographic region (Latin America, South Asia, Africa, etc.) and provide a working knowledge of the culture, history, and political economy of a region in the developing world. Students may also enroll in the Honors Program or in the Senior Program (both described above).

Foreign Language Requirement

All DS students must be able to demonstrate proficiency in any single modern language (other than English) equivalent to four college-level semesters.

There are three ways students can fulfill the four-semester language requirement, depending on their backgrounds and abilities:

(1) Through course work. Any combination of high school courses, college courses, summer programs, or college study abroad programs that 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 complete the requirement. However, transcripts and score reports must be provided and evaluated by an adviser. For more information, see a DS adviser concerning language study abroad.

(2) With a proficiency exam. Students whose language skills are at fourth semester or beyond and who do not wish to take courses can opt to test out of this requirement. However, not all of Berkeley’s language departments offer proficiency exams. See a DS adviser about specific departmental policies.

(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 at the lower division level. DS 10 is a critical course since it provides the essential background for DS 100. Lower division requirements may be satisfied with appropriate upper-division classes with prior consent from a faculty adviser. Several options are listed below. Consult the Teaching Program Office for information on current acceptable substitutions.

Required Courses. Anthropology 3, Introduction to Social and Cultural Anthropology; Development Studies 10, Introduction to Development Studies; Economics 1 or 2, Introduction to Economics; Political Science 2, Introduction to Comparative Politics; Statistics 2, Introduction to Statistics, or Statistics 20, Probability and Statistics, or Statistics 21, Introduction to Probability and Statistics for Business. DS 10 and Econ 1 or 2 must be completed before admission to the major.

Note: With prior written consent from a faculty adviser, students may make the following substitutions: Anthropology 3, Anthropology 144; Economics 1, Environmental Economics and Policy 1; Political Science 2, Political Science 139B or Political Science 139C.

Upper Division Requirements

No less than 30 units in upper division courses, including five core courses, a minimum of one course in research methods, and a minimum of three upper division area courses. In fulfilling the course requirements outlined above, students should choose course work from at least two different disciplines in addition to the required course work in development studies. Specifically, the requirements are as follows:

I. Core Courses

Minimum of five courses. Development Studies 100 is required; plus a minimum of two courses from section B and a minimum of two courses from section C. The core courses are meant to provide a systematic background for students in two critical disciplines of their choosing and (2) development theory. Each DS major should endeavor to build up a strong command of one social science discipline (for example, economics, political science, geography) through two courses which provide critical concepts and methods for the study of developing countries. Course selections listed in section B provide numerous options. In addition, each student should choose a minimum of two development-focused courses from section C. These courses address a variety of historical, cultural, and political-economic concerns in the developing world and supplement the core disciplinary courses.

A. Development Studies 100, History of Development and Underdevelopment.

B. Disciplinary Courses: Minimum of two courses selected from the following list. Both courses should be from the same discipline.

Anthropology: 114, 141, 144, 147A, 147B, 148, 169B.

Economics: 100A and 100B; or 101A and 101B; IAS 106 and 107.


Geography: 110, 130.

History: 101, 103.

Political Economy: Economics 109; Geography 110; PEMS 100, 101; Political Science 115C, 126A, 126B.


C. Development Courses: Minimum of two courses selected from the following list.

African American Studies: 112A, 112B.

Anthropology: 115, 144, 145, 156B, 157, 158, 189.

Business Administration: 188.

City and Regional Planning: 110, 111, 115, 116, 270.

Development Studies: 130, 140, 150.


Energy and Resources: 100, 151.


Environmental Science, Policy, and Management: 155, 163, 165, 166, 167.

Ethnic Studies: 190.


History: 100, 103, 134A, 134B, 160.

Political Science: 121A, 139B, 139C, 182.

Public Health: 106, 114, C207B, 212C, 212D, 222.

Rhetoric: 150, 155.

Social Welfare: 100.


*Adviser approval required.

II. Methodology

Minimum of one course. The methodology requirement is designed to give each DS major a set of methodological skills appropriate to the disciplinary and core focus of each student’s program. The methods course can be drawn from any of two
broad categories and the selection of the most appropriate class for each student should be undertaken in consultation with an adviser. The first category focuses on advanced statistical methods and computer-assisted data analysis, building upon the skills acquired in the lower division statistics requirement. 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. One course should be selected from either of the following lists. A second course is strongly recommended.

**Recommended Courses (Lower and Oriented to Questions of Survey Design, Field Analysis, Building Upon the Skills Acquired in the Lower Division Statistics Requirement)**

Statistics and 2 before enrolling in Economics 140 or 141. (2) Political Science 132A-132B are upper division courses. Students interested in writing a major paper on a development topic should consider enrolling in Economics 140 or 141. (3) Political Science 132A-132B are upper division courses.

**Research Methods**

Recommended courses are listed below. The adviser should consult with the student to determine the most appropriate courses.

- **Economics 100A-100B (Economic Analysis I and II)**
- **Political Science 131A-132B**
- **Sociology 183**
- **Anthropology 170, 171, 176, 177, 180, 181, 184, 186, 188**
- **Middle Eastern Studies 130, 140, 150**
- **Latin American Studies 130, 140, 150**
- **African American Studies 131, 135**
- **Chicano Studies 125, 130**
- **Economics 161, 162**
- **Geography 156, 158, 163, 167**
- **Asian American Studies 125, 130**
- **Sociology 183**

**Advisor approval required.**

**Recommended Courses (Lower and Upper Division)**

Listed below are classes which development studies majors have found particularly relevant and helpful in providing an interdisciplinary approach to the study of international development, questions of comparative development, and in providing a basic introduction for methodology courses:

- **Environmental Science, Policy, and Management 15, Environmental Issues; Environmental Design 4, World Cultures; Peoples and Cultural Environments; Mathematics 16A, Analytical Geometry and Calculus.**

**Lower Division Courses**

10. 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, as well as a prerequisite for the upper division courses. It is assumed that students enrolled in 110 know little about life in the Third World countries and are unfamiliar with the relevant theory in political economy of development and underdevelopment. The course will be structured around three critical concepts: land, labor, and work. (F)

**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, as well as a prerequisite for the upper division courses. It is assumed that students enrolled in 110 know little about life in the Third World countries and are unfamiliar with the relevant theory in political economy of development and underdevelopment. The course will be structured around three critical concepts: land, labor, and work. Also listed as Geography C10.**

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 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**

C100. History of Development and Underdevelopment. (4) Three hours of lecture and one hour of discussion per week. Historical review of the development 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 interpretations of development and underdevelopment. Also listed as Geography C112. (H)

130. Cross-Listed Topics. (1-4) Course may be repeated for credit as topic varies. One and one half 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 Development Studies majors. Contact the course instructor for a syllabus. (F,SP)

150. Advanced Studies in Development Studies. (4) Course may be repeated for credit with consent of instructor. Three hours of lecture and one hour of discussion per week. Advanced multidisciplinary research in current issues and topics of development. Seminars will focus on specific geographical areas with appropriate comparative material included. A major research project is required as a culminating class presentation. Topics change each semester. (F,SP)

192. Senior Thesis. (3) Prerequisites: Upper division standing and consent of instructor. This course is designed 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)

198. Directed Group Study. (1-4) Course may be repeated for credit. Group meetings to be announced. Must be taken on a passed/not passed basis. Prerequisites: Upper division standing and consent of instructor. 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 proposal must be approved by a faculty advisor. Enrollment is restricted by regulations of the College. (F,SP)

**Dutch Studies (College of Letters and Science)**

Group Major Office: 5311 Dwinelle Hall, (510) 642-7445
http://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)
Blake Lee Spaul, Ph.D. (German, Comparative Literature)
J. Fris Staal, Ph.D. (South and Southeast Asian Studies)

**Associate Professors**

Elisabeth Honig, Ph.D. (History of Art)
Sylvia C. Twon, Ph.D. (South and Southeast Asian Studies)

**Lecturer**

Antoinette Worrell, M.A. Utrecht University

**Peter Paul Rubens Professors**

Hugo Baetens Beardsmore, Ph.D. (Brussels, 1998)
Herman Braet, Ph.D. (Ghent, 2000)
Els de Bens, Ph.D. (Ghent, 2001)
Ferdinand J. de Hen, Ph.D. (Ghent, 1987)
Marc de Mey, Ph.D. (Ghent, 1987)
Regina de Schryver, Ph.D. (Leuven, 1982)
Dina Helleman, Ph.D. (Brussels, 1992)
Marcel Janssens, Ph.D. (Leuven, 1988)
Clem-Louis Neijtjens, Ph.D. (Antwerp, 1995)
Walter Prevenier, Ph.D. (Ghent, 1983)
Eugene Roosens, Ph.D. (Leuven, 1990)
Hilde Symoens-de Ridder, Ph.D. (Ghent, 1998)
Carlos Timmendam, Ph.D. (Antwerp, 1985)
Kajoline van der Stighelen, Ph.D. (Leuven, 2002)
Herman van der Wee, Ph.D. (Leuven, 1994)

**Adviser: Mr. Snapper, Ph.D.**

**Group Major in Dutch Studies**

The group major in Dutch studies is designed to present a balanced curriculum of the language, literature, history, and culture of The Netherlands and Flanders. Since the program is both specialized (in dealing with two countries) and broad (in its many-sided approach to the subject), it is recommended that the student also prepare a strong related discipline so that the group major in Dutch
The Major

Lower Division. Dutch 1 and 2 or equivalent.

Upper Division. The student is expected to complete 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 (latter 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 history of art course (166, 172, 173).
- Senior Thesis: Dutch 190.

Additional courses to be selected from the following 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 120.

Majors in Dutch studies who are enrolled in Dutch 150, 160 series, 165; Afrikaans 150; History 163, 170; Comparative Literature 170; Music 120.

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 following: Dutch 107, 140, 160, 161, 162, 163, 164, 165, 167, 180; Afrikaans 150.

A letter grade of C or better is required for the upper division course applied to the minor.

Dutch studies courses are listed in the German section of this catalog (following German graduate course listings).

Earth and Planetary Science

(College of Letters and Science)

Department Office: 307 McCone Hall #4767, (510) 642-3993
http://eps.berkeley.edu/www/index.html
Chair: Barbara Romanowicz, Ph.D.

Professors

Walter Alvarez, Ph.D. Princeton University. Stratigraphy, earth history, tectonics, impacts and mass extinctions
William B. N. Berry, Ph.D. Yale University. Climate change, environmental issues, extinction patterns
George H. Brethol, Jr., Ph.D. University of California, Berkeley. Mineral resources, geochemistry of surficial ore formation, field geology and digital mapping
Mark T. S. Bukowski, Ph.D. University of California at Los Angeles. Physics of planetary interiors
*an S. E. Carmichael (Emeritus), Ph.D. Imperial College of Science and Technology, University of London. Igneous and experimental petrology
Kurt M. Caffrey, Ph.D. University of Washington. Glaciology, geomorphology, paleoclimatology, earth system science
Imrie de Pater, 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 surfaces

Donald J. DePaolo, Ph.D. California Institute of Technology. Isootope geochemistry
William E. Dietrich, Ph.D. University of Washington. Hillslope and fluvial geomorphology
Irene Fung, Sc.D. Massachusetts Institute of Technology. Geophysical fluid dynamics, numerical modeling, biogeochemical cycles, remote sensing of earth systems, atmosphere-ocean interactions, atmosphere-biosphere interactions
Harold C. Helgeson, Ph.D. Harvard University. Theoretical geochemistry, thermodynamics
Raymond Jeanloz, Ph.D. California Institute of Technology. Ultra-high pressure research, earth interior
James W. Kirchner, Ph.D. University of California, Berkeley. Environmental geodesy, seafloor mass balance, hydrodynamics, geophysics, evolution of ocean
H. Frank Morrison, Ph.D. University of California, Berkeley. Applied geophysics
James W. Rector III, Ph.D. Stanford University. Applied seismology
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, deep-earth structure, earthquakes
Chi-yuen Wang, Ph.D. Harvard University. Tectono-pedogenesis, rock deformation
Hans-Rudolf Werne, Ph.D. University of Zurich. Crystallography, mineralogy, structural geology
Bruce A. Bolt (Emeritus), Ph.D. D.Sc., University of Sydney
Garniss H. Curtis (Emeritus), Ph.D. University of California, Berkeley
Richard L. Hay (Emeritus), Ph.D. Princeton University
Lane R. Johnson (Emeritus), Ph.D. California Institute of Technology
David L. Jones (Emeritus), Ph.D. Stanford University
Luna B. Loepold (Emeritus), Ph.D. Harvard University
Lionel E. Weiss (Emeritus), Stanford University of Edinburgh; University of Birmingham (Emerging)

Associate Professors

Rudi Braakman, Ph.D. Stanford University. Active tectonics, measurements and modeling of crustal deformation, structural geology
Ronald Cohen, Ph.D. University of California, Berkeley. Atmospheric chemistry
Douglas S. Dreger, Ph.D. California Institute of Technology. Seismology, earth structure, earthquake source physics
B. Lynn Ingram, Ph.D. Stanford University. Paleoclimate reconstructions, geology of plate tectonics, physical oceanography
Michael Manga, Ph.D. Harvey University. Geodynamics, volcanology, hydrology

Assistant Professors

Richard Allen, Ph.D. Princeton University. Seismology, tectonics and associated societal issues
Krista A. Boering, Ph.D. Stanford University. Atmospheric chemistry and dynamics

Adjunct Professors

Steve Pride, Ph.D. Texas A&M. Trusted seismology, poroelasticity, electrical properties of rocks, physics of brittle fracture
Paul Renne, Ph.D. University of California, Berkeley. Chronology of tectonic and magmatic processes
Dons Sloan, Ph.D. University of California, Berkeley. Stratigraphy, biostatigraphy, history of S.F. bay

Department Overview

The Department of Earth and Planetary Science (formerly Geology and Geophysics) offers a program of instruction that focuses on the origin, evolution, structure and dynamics of the Earth and other planetary bodies. This is an emerging discipline built from such fields as geology, geophysics, geochemistry, oceanography, and the atmosphere—environmental and planetary sciences. We offer classes that provide core training in specialized topics, as well as integrative courses that provide a broad overview. Beginning with an introduction to the planet earth, the undergraduate major has five tracks, and students are given many options for courses. Extensive opportunities are provided for field work, laboratory work, and theoretical investigations. Our upper division and graduate courses are relatively small in size, allowing close interaction between students and faculty. Our graduate program provides strong training for those who wish to pursue professional careers in the Earth, environmental and planetary sciences, but it also provides training in critical thinking and research that serves well those who choose other paths, such as teaching, law, resource management and other sciences. The graduate program is driven largely by collaborations in research with faculty who are leaders in their field.

Major in Earth and Planetary Science

The Department of Earth and Planetary Science offers one undergraduate major leading to a B.A. degree in Earth and Planetary Science. There are five tracks within the EPS degree (formerly Geology and Geophysics, environmental earth science, atmospheric science, and marine science). Students in the old geology, geophysics, and earth science majors should consult with the department about their program. Lower division prerequisite courses must be taken on a letter-graded basis (except when a course is offered only on a P/NP basis) and must be completed with a grade of C or higher in each course. The department will allow one D grade in a lower division class as long as the student maintains at least a C average in the major.

Geology Track

Geology Adviser: Walter Alvarez, Ph.D.

Geology is the science of the earth—of its minerals and processes, of its origin and evolution. It is a broad science concerned with a vast range of physical phenomena in both space and time, and requires a broad scientific background. Trained geologists can address a wide range of concerns, including energy supply, mineral resources, and environmental protection. The track provides a strong background in the processes shaping the earth; it emphasizes quantitative understanding and a strong foundation in the physical sciences.

Lower Division: Math 1A-1B, Physics 7A-7B, Chem 1A-1B, EPS 50 and 60

Upper Division: EPS 100A, 100B, 101, 102, 118, 150 plus 6 additional upper division units (see department or go to http://eps.berkeley.edu/www/index.html for a list of electives)

Geophysics Track

Geophysics Adviser: Douglas Dreger, Ph.D.

The Geophysics track is designed to provide students with theoretical, field, and laboratory experience in studying geodynamic processes and the structure of the Earth and other planets. It is designed for students with good physics and mathematical ability. It provides a solid background in physical science and mathematics with an emphasis on the physics of the Earth.

Lower Division: Math 1A-1B, Math 53, 54, Physics 7A-7B-7C, Chem 1A-1B, EPS 50

Upper Division: EPS 102, 104, 121, 150 plus 6 additional upper division units (see department or go to http://eps.berkeley.edu/www/index.html for a list of electives)

Environmental Earth Science Track

Environmental Earth Science Adviser: William Berry, Ph.D.

The Environmental Earth Science track is designed to provide students with a broad background in the earth sciences with an emphasis on environmental sciences. Interrelationships between physical, biological, and chemical processes at the earth’s surface will be emphasized. The track focuses more broadly on the natural sciences by using earth science mainly as a base for expanding outward depending upon students’ interests by incorporating courses in biology, hydrology, hazardous waste management, ecology and natural resources. The program is designed to provide background for graduate study in environmental science, preparation for work within governmental agencies such as the Environmental Protection Agency, Bureau of Land Management, United States Geological Survey or consulting firms, or
broaden involvement in land use planning, business, policy, law or management.

**Lower Division:** Math 1A-1B (or 16A-16B), Physics 7A-7B (or 8A-8B), Chem 1A-1B (or 3A), Biology 1B, EPS 50

**Upper Division:** EPS 102, 117, 120, 120L, 150, ERG 102 plus 10-12 additional upper division units (see department or go to http://eps.berkeley.edu/www/index.html for a list of electives)

### Atmospheric Science Track

**Atmospheric Science Adviser:** William Berry, Ph.D.

This course of study is a new undergraduate program (http://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 most intellectual and technical challenges of our age. Examples of our current research endeavors will include the physics of climate variability and climate change, changes in stratospheric ozone, coupling of atmospheric chemistry and climate change in the oxidation capacity of the troposphere, smog, and the impacts of atmosphere-biosphere exchange on atmospheric composition.

**Lower Division:** Math 1A-1B, Math 53, 54, Physics 7A-7B-7C, Chem 1A-1B, EPS 50

**Upper Division:** EPS 102, 150, C180, 181, 182 plus 5 additional upper division units (see department or go to http://eps.berkeley.edu/www/index.html for a list of electives)

### Marine Science Track

**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, 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 endeavors 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 environments, and focusing on Earth’s role in other oceanic/economic events recorded in marine sediments and corals; coastal pollution and its affects on 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-1B (or 3A), Biology 1B, EPS 50, C82

**Upper Division:** EPS 102, 150 and four courses from the following: EPS 100A, 108, 103/203, 115, C146, IB 106, IB 106A plus 4-6 additional upper division units (see department or go to http://eps.berkeley.edu/www/index.html for a list of electives)

### Planetary Science Track

**Planetary Science Track Adviser:** Raymond Jeanloz, 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 silicate planets, the forces that sculpted their orbits, the processes that shaped their interiors, surfaces, and atmospheres and the development of life all fall under its rubric. Understanding the 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, Physics 7A-7B-7C, Chem 1A-1B, EPS 50, Math 53, 54

**Upper Division:** EPS 102, 150, C162 plus 14 additional upper division units (see department or go to http://eps.berkeley.edu/www/index.html for a list of electives)

### Honors 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 the honors track.
2. carry out an individual research or study project, involving at least three units of H195. The project is chosen in consultation with a departmental advisor, and a written report is judged by the student’s research supervisor and a departmental advisor. Application for the Honors Program should be made through the student’s adviser no later than the end of the student’s junior year.

### Minor in Earth and Planetary Science

**Lower Division:** Earth and Planetary Science 50 or equivalent

**Upper Division:** Five upper division courses chosen from the major list and approved by the major adviser. In consultation with prior approval of the major adviser, students will have the opportunity to choose a coherent program which parallels the department’s major tracks or a general interest track. Course selections will be guided by the same parameters as those in the major tracks with an emphasis on central focus of the field work in the ERC directed at exploration, development and cleanup of abandoned mines. The中心主任 encourages an integrated understanding of the field of Earth and planetary sciences and the role of discovery in planning and managing the environment.

**Student Affairs Officer in 305 McCone Hall.

### Graduate Programs

**Graduate Advisers:** Michael Manga, Ph.D. and Roland Bürgmann, Ph.D.

The department offers M.A., M.S., and Ph.D. degrees in Earth and Planetary Science. The central objective of the graduate program is to encourage creative thinking and develop the capacity for independent research. A strong undergraduate background in the sciences other than geology is especially helpful, and a significant number of our graduate students have their training in physics, chemistry, mathematics, engineering or astronomy. Graduate students are formally accepted into the Earth and Planetary Science program, and they normally work directly toward a Ph.D. A master’s degree is not prerequisite for a Ph.D.

**Master’s Degree.

Requirements for the Master of Arts degree consist of 24 semester units of upper division and graduate courses (at least 12 must be graduate, research units), followed by a comprehensive oral examination. The Master of Science degree is granted upon completion of 20 semester units of upper division and graduate courses (at least 8 units must be graduate, non-research units), and submission of a master’s thesis. The master’s thesis should be completed within four semesters (two years).

**Ph.D. Degree.

Candidates for the Ph.D. degree must pass the oral qualifying examination by the end of the second year and complete a thesis to the satisfaction of the appointed thesis committee. Students must have two research propositions to present at the qualifying examination, each developed under the supervision of a different professor on substantially different topics.

### Research Facilities

Center for Isotope Geochemistry, under the directorship of Professor Donald DePaolo, consists of solid-source mass spectrometers and clean chemistry laboratories on campus, and facilities for stable isotopic measurements, rare gas isotope measurements, and cosmogenic isotope measurements at Lawrence Berkeley Laboratory. Research programs at the Center are directed toward studies of both paleoceanographic and hydrological processes and the structure and evolution of the oceans, the mantle, and the continental crust.

The Earth Resources Center (http://eps.berkeley.edu/groups/erc/index.htm), under the directorship of Professor George Brinhall with faculty from eight campus departments, conducts interdisciplinary research and education on the genesis, geochronology, discovery, production, and environmental consequences of development of nonrenewable earth resources of minerals and fuels.

The focus on the center is in developing an understanding of the underlying geological, physical, and chemical processes that affect the origin, age, emplacement, and economic recovery of minerals and hydrocarbons in the context of mitigating the environmental impact of the use of these resources. Digital mapping using portable computers, GPS, laser range finders, infrared spectrometers and proton precession tomography, and improving the long-term management of developed resources including their water, air and soil quality.

The Center for Atmospheric Sciences (http://www.atmos.berkeley.edu/) is a new multidisciplinary academic group at Berkeley. It focuses on phenomena that involve interactions between the atmosphere’s chemical composition and circulation. It also examines the climatic effects of changes in these processes. A special emphasis is the interaction between the geosphere-biosphere and climate, with the atmosphere as the synthesizer of changes at its boundaries, and the communicator of these changes to the other spheres. Center activities are distributed across eight campus departments, and the center is directed by the Earth Resources Center at Berkeley Geomorphology Group, Department of Earth and Planetary Science, Department of Chemistry, Department of Environmental Science, Policy and Management, Department of Mechanical Engineering, Space Sciences Laboratory, and Berkeley National Laboratory, among others. Research approaches are multi-faceted, and include: global climate modeling, instrumental and remote sensing of atmospheric chemistry, aircraft measurements of stratospheric-tropospheric exchange, measurements and simulations of atmospheric circulation, air and soil quality, and enhancement of conventional ores to minimize pollution and waste, developing useful by-products and improving the long-term management of developed resources including their water, air and soil quality.

The Berkeley Geomorphology Group (http://socrates.berkeley.edu/~geomorph) prosper by the strength of strong research units across the campus and because of a commitment to undergraduate teaching and graduate training. The core faculty consist of Kurt Cuffey (Geography), William Dietrich, Jim Kirchner, and Michael Manga (Earth and Planetary Science). Their research programs tackle a wide range of topics including glacier mechanics, paleoclimatic analysis, hydrology, environmental geochemistry, landscape evolution, hillside erosion, 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 environments, and focusing on Earth’s role in other oceanic/economic events recorded in marine sediments and corals; coastal pollution and its affects on coastal marine ecosystems; coastal erosion (natural and human-caused).

**B prefix=language course for business majors
C prefix=cross-listed course
H prefix=honors course
R prefix=course satisfies R&Q requirement
AC suffix=course satisfies American cultures requirement
H prefix=honors course
P R suffix=course satisfies R&C requirement
R prefix=course satisfies R&C requirement
AC suffix=course satisfies American cultures requirement
H prefix=honors course
"Professor of the Graduate School"
"Recipient of Distinguished Teaching Award"
slope erosion mechanics, fluvial processes, restoration geomorphology, and biotic extinctions and evolutionary processes. These faculty and their students interact and collaborate with many other related groups on campus.

Active Tectonics Group (http://www.seismo.berkeley.edu) is an interdisciplinary approach to investigate active tectonic processes. This approach integrates geodetic, geomorphic, geologic, and seismological observations with theoretical models to improve our scientific understanding of fault zone processes and crustal deformation, and to identify associated hazards.

The Berkeley Geochronology Center (http://www.bgc.org) is a non-profit scientific research institution dedicated to establishing the history of the Earth, its surface, and its interior with the rest of our Solar System, throughout the 4.6 billion years of our Planet’s existence. Using the most advanced technology available, BGC scientists determine the ages of rocks and other materials to date important events in geological and biological history. Through understanding such information in geologic context, BGC research provides key insights into such processes as continental drift, volcanism, mountain building, mass extinctions, interactions between the Earth and Solar System, and the evolution of life, including human evolution.

Seismological Laboratory. (http://www.berkeley.edu) The University operates several networks of geophysical instruments in northern California to study earthquakes and tectonic processes at the regional scale. Twenty-one continuous seismometers regionally distributed and linked by continuous telemetry to UC Berkeley forms the core of the monitoring program. In addition, a network of permanent GPS stations and automated borehole seismometers are maintained and operated by the lab, as well as an on-line archive for earthquake related data in northern California. Re-search on the propagation of earthquake waves through complex structures, the nature of earthquake sources, eigenvibrations of the earth and global tomography.

Center for Computational Seismology. Within the Earth Sciences Division at the Lawrence Berkeley National Laboratory is a facility for modern seismological research which relays heavily upon computational analysis (e.g., acoustic imaging, 3D wave propagation, high resolution inversion formalisms) or large database manipulations. The center is used in a number of Ph.D. and postdoctoral research studies.

The Engineering Geoscience Group (http://bozo.1.lbl.gov) teaches and researches Applied Geophysics. It is an integral part of the Geological Engineering department of the School of Earth and Environmental Engineering at the University of California at Berkeley. The group formed originally in 1962, to study and encourage the use of geophysical methods in mineral and petroleum exploration. The group continues to develop new methods, and to provide students with a solid understanding of the application related to the resolution of geotechnical, geophysical, oceanographic, organic chemistry, biology, and planetary science. These disciplines are well represented in the group, with many re-search programs with long records of accomplishment have existed for some time in diverse campus departments, the Space Science Labo-ratory, and the Lawrence Livermore National Lab-oratory. CIPS takes advantage of these strengths with the 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 require knowledge across traditional disciplinary boundaries. From the condensation of planets within protoplanetary discs to the geochemical histo-ry 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 session per week. The primary goal of the course is to present some introductory earth science and to provide students with a solid understanding of 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) to simulate common gemstons, and (6) issues associated with the synthesis of gems. Information about each of the main gems groups is provided. Additional credits require 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 human civilization. Hydrologic cycle, floods, droughts, groundwaters, climate change emphasizing how such knowledge can constrain present day thinking about (and predictive mod-els of) future climate change. We will cover the entire spectrum of climate change from the formation of the Earth’s early atmosphere and ocean to the ice ages to the development of instrumental records. (F,SP)

4. 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 emphasizing how such knowledge can constrain present day thinking about and predictive models of future climate change. We will cover the entire spectrum of climate change from the formation of the Earth’s early atmosphere and ocean to the ice ages to the development of instrumental records. (F,SP)

5. The Planets. (3) Three hours of lecture per week. Formerly Geology 10. An introduction to the planets and moons of the solar system, and an introduction to their internal structures, atmospheres, and surface features. Processes that form planets and act continually to change them (e.g., earthquakes, volcanoes, giant impacts) are discussed, as are comets, asteroids, rings, and life. Information gained from recent spacecraft missions is highlighted. Intended for non science majors. Also listed as Letters and Science C70T and Astronomy C121. (F,SP)

6. Earthquakes. (3) Two hours of lecture per week. Formerly Geology 20. An introduction to earthquakes, their causes and effects. General discussion of basic principles and methods of seismology and geologic tectonics; distribution of earthquakes; shock waves, effects of earthquakes, and earthquake hazard and risk, with particular emphasis on the situation in California. (F,SP)

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 to 4 to be graded on a letter-grade basis. Sections 5 to 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 explore a topic in geology or earth sciences with a faculty member in a small seminar setting. Topics will vary from semester to semester but will include such topics from great voyages of geo-logic discovery and the role of atmosphere sciences in geologic study.

C30. The Ocean World. (4) Three hours of lecture and one hour of mandatory research discussion per week. The oceans cover 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 dark abyss, life is supported by a rain of nutrients from pelagic photosynthesis, and by chemosynthetic bacteria near hot vents and fissures. 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 Ninios, volcanic islands, coastlines and beaches, new frontiers in ocean sciences, including the technologies used to monitor and probe the ocean depths: including scuba, submersibles, and satellites. Also listed as Geography C30. Ingram

39. Freshman/Sophomore Seminar. Course may be repeated for credit. Sections 1 to 2 to be graded on a letter-grade basis. Sections 3 to 5 to be graded on a passed/not passed basis. Prerequisites: Prior training in elementary mathematics. Formerly Geology 39. Freshman and sophomore seminars offer lower division students an 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.

49A. Geology of National Parks. (3) Three hours of lecture and one hour of mandatory research discussion per week. This course introduces students to geology through an exploration of our national parks. Students will learn about the major processes of the earth—ranging from volcanism, continental drift, and mountain building, to river erosion, glaciers, and groundwater movement—through an exploration of the natural beauty of the various parks. The course will also touch upon environmental issues and early American history, both prehistoric and historic. (F,SP) Wang

49B. Geology of National Parks. (1) One two-day field trip. This course is the field component of 49A. Enrollment is limited to 30 students. (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 physical and chemical pro cesses that have shaped the earth through time, with emphasis on the theory of plate tectonics. The laboratory work will involve the practical study of minerals, rocks, and geologic maps and exercises on geological processes. (F,SP)

60. Quantitative Analysis of Earth Sciences. (4) Three hours of lecture and one hour of discussion per week. Formerly Geology 60. An introduction to statistical methods in earth sciences, and quantitative description of geological processes. Topics include rate processes, description of three dimensional geological fields like gravity, temperature, velocity; conservation equations; deformation; plate kinematics; geological time series; multiple chemical equilibria. (F,SP)

80. Environmental Earth Sciences. (2) Students will receive no credit for 80 after taking Integrative Biology 80 or Paleontology 15. Two hours of lecture per week. Formerly Geology 80. The course introduces students to the subject of 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 an understanding of earth’s environmental processes. (F,SP)

C82. Introduction to Oceans. (2) Two hours of lecture per week. Prerequisites: C30. The course introduces students to the following courses at high-school level: physics, chemistry, or bi ology is recommended. The geology, physics, chem istry, and biology of the world oceans. The application of oceanographic principles to the study of the world oceans is 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,SP) Staff
Sophomore Seminar. (1,2) Course may be repeated for credit as topic varies. Group meetings of various lengths. Three hours of seminar per week 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 of- fered by faculty members in departments all across the campus. Sophomore seminars offer opportunity for closer, 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 sopho- morens. (F.S.P)  

Directed Group Study. (1-4) Course may be repeated for credit. Group meetings of various lengths. Must be taken on a passed/not passed basis. Formerly Geology and Geophysics 98. Group studies of se- lected topics which vary from semester to semester.  

Upper Division Courses  

Communicating Ocean Science. (3) Two and one-half hours of lecture and one hour of fieldwork per week. Prerequisites: One course in introductory biol- ogy, geology, chemistry, physics, or marine science re- quired and interest in ocean science; junior, senior, or graduate standing; consent of instructor required for seniors. Three hours of lecture and one or two hours of supervised teaching and learning pedagogy with 10 weeks of supervised teach- ing experience in a local school classroom. Thus, stu- dents will practice communicating scientific knowledge and receive mentoring on how to improve their presen- tations. Also listed as Integrative Biology C100. (SP) Ingram  

Minerals: Their Constitution and Origin. (4) Two hours of lecture and six hours of laboratory per week. Prerequisites: Some background in chemistry and geology. Formerly Geology 102A. Introduction to structural, compositional, and physical properties of minerals, their analogs and related substances, their genesis in various geological and synthetic processes, and laboratory techniques to identify and investigate minerals. One field trip to selected mineral deposits and visits to laboratories.  

Geology and Interpretation of Rocks. (4) Two hours of lecture and four hours of laboratory per week, plus one two-day field trip. Prerequisites: Geology 105. Formerly Geology 100B. Introduction to the principal ge-ologic environments where rocks are formed and dis- played. Igneous, sedimentary, and metamorphic processes discussed in the context of global tectonics.  

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 equiva- lent introductory course in Earth and Planetary Sci- ence. Formerly Geology 101. Geologic mapping, field observa- tion and problem-solving in the Berkeley hill- country as a whole through field trips to key localities. Training in digital field mapping, global positioning sys- tems, and laser surveying. Interdisciplinary focus en- couraged and opportunities for majors.  

History and Evolution of Planet Earth. (4) Three hours of lecture and one hour of discussion per week. Prerequisites: 50. Formation and evolution of the earth. Nucleosynthesis; formation of the solar system; plate tectonics and the earth and solar system; formation of the core, mantle, oceans, and atmo- sphere; plate tectonics; heat transfer and internal dy- namics; stratigraphic record of environment, and evo- lution; climate change.  

Introduction to Marine Geochemistry. (3) Three hours of lecture per week. Prerequisites: Chemistry 1A-1B, Mathematics 1A-1B, and Physics 7A. Introduction to marine geochemistry; the global wa- ter cycle; major processes governing the distribution of chemical species within the hydrosphere; mass bal- ances, fluxes, fates, and reactions in the marine environment, and from global to submicron scales; relationships to phys- ical, biological, and geological processes; geochemi- cal tracers and tools.  

Mathematical Methods in Geophysics. (4) Three hours of lecture and one hour of computer lab- oratory per week. Prerequisites: Mathematics 53-54, Formerly Geophysics 104. Linear systems. Linear inverse problems, least squares; generalized inverse, resolution; Fourier series, integral transforms; time se- quences analysis. Geology 117. Use of linear differential equations of geophysics; functions of a complex vari- able; probability and significance tests, maximum like- lihood methods. Intended for students in geophysics and other physical sciences.  

Hydrogeology. (3) Three hours of lecture per week. Prerequisites: Math 1A-1B, Physics 7A, Chem- istry 1A-1B, 60 or Math 53 is recommended. Formerly Geology 105. An overview of the principles governing flow and transport of groundwater and fluid flow, transport of energy and so- lutes, migration of hydrocarbons and contaminants, and waste isolation.  

Crossroads of Earth Resources and Soci- ety. (4) Three hours of lecture and one hour of discussion per week. Prerequisites: Upper division standing in Department of Earth and Planetary Science or consent of instructor. Formerly Geology 107. Geologic aspects of the theory of plate tecton- ics. Mathematics of plate rotations on the surface of principal tectonic regions around the globe.  


Geodynamics. (4) Three hours of lecture and one hour of discussion per week. Prerequisites: Upper division standing in Department of Earth and Planetary Science or consent of instructor. Formerly Geology 107. Geometric and dynamic aspects of the theory of plate tecton- ics. Mechanics of plate rotations on the surface of principal tectonic regions around the globe.  

Petroleum Geology. (3) Three hours of lecture per week. Prerequisites: Introductory course in geology. Formerly Geology 111. Basin development re- lated to plate tectonics; petroleum geology, volumetric, thermal potential, distribution of organic matter in source rock. Primary and secondary migration. Petroleum composition. Reservoir rock: stratigraphy and subsurface conditions, diagenesis and re- sistance. Reservoir fluids and energy. Oil provinces, individ- ual fields.  

Stratigraphy and History Earth. (4) Three hours of lecture and three hours of laboratory per week. Prerequisites: 103A, 103B, or consent of instructor. Formerly Geology 115. Collecting, analyzing, and presenting stratigraphic data; dating and corre- lating sedimentary rocks; recognizing ancient envi- ronments and using these in the interpretation of sequence stratigraphy; event stratigraphy and neo- natization; applications of stratigraphy to climate change, petroleum geology, and archaeology.  

Structural Geology and Tectonics. (3) Two hours of lecture, two hours of laboratory, several one- to two-day field trips. Prerequisites: Geology 104A or con- sent of instructor. 101 should be taken concurrently. Formerly Geogy 116. Introduction to classification and geometry of geologic structures; their origins and genetic relation to stress fields and their use as kine- matic indicators; case histories of major orogenic regions to elucidate tectonic evolution of mountain systems in dif- ferent plate tectonic settings. Laboratory exercises will focus on analysis of hand specimens and structural re- lations portrayed on geologic maps. Several trips to ob- serve geologic structures in the field to supplement lab- oratory exercises.  

Geomorphology. (4) Three hours of lecture and three hours of laboratory per week, plus weekend field trips. Prerequisites: 50 or consent of instructor. Formerly Geology 117. Course examines land- forms, runoff generation, weathering, mechanics of soil erosion by water and wind, mass wasting, glacial and periglacial processes and hillslope evolution.  

Advanced Field Course. (4) Three hours of lect- ure and two hours of discussion per week, plus two 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 instructor. Includes prepara- tion of final reports. (SP) Brinhall  

Geologic Field Studies. (2) Course may be re- peated for credit. Prerequisites: 101 and consent of in- structor. Formerly Geology 119. Two to four weekend field trips to localities of geological interest.  

Analysis of Environmental Data. (4) Three lecture hours and three hours laboratory per week. Prerequisites: One year of calculus or consent of instructor. Formerly Geology C120. Fundamentals of exploratory data analysis and hypothesis testing for environmental scientists. Course covers charac- terizing and evaluating uncertainty. Introduction to se- lected topics relevant to environmental analysis, in- cluding error propagation, design of experiments, and statistical methods. Methods include techniques for evalu- ating real environmental data, explore concepts and techniques presented in lecture. Also listed as Energy and Resources Group C130. (F) Kirchner  

Seismology. (4) Three hours of lecture and three hours of laboratory per week. Prerequisites: Physics 7A-7B and Mathematics 53, 54. Formerly Geophysics 121. Elastic waves in the earth; forward and inverse problems for the velocity distribution; refraction and reflection methods of seismic exploration. Theory of the seis- mograph; interpretation of seismograms; causes, effects, and distribution of earthquakes; mech- anisms of earthquakes; earthquake hazard and risk.  

Physics of the Earth and Planetary Interiors. (3) Three hours of lecture per week. Prerequisites: Physics 80. Formerly Geophysics 122. Energy field, density distribution, and internal structure of the Earth and planets. Constitution, composition, temperature distribution, and energetics of the Earth’s interior. The geomagnetic field, paleomagnetism, the geodynamo, and concepts in geophysical fluid dynamics.  

Isotopic Geochemistry. (4) Three hours of lect- ure and one hour of discussion per week. Prerequi- sites: Chemistry 1A-1B, Mathematics 1A-1B. An overview of the use of natural isotopic variations to study the Earth, planetary systems, and environmental problems. Topics include geochronology, cosmogenic isotopes, studies of surficial processes, radiocarbon and the car- bon cycle, water isotopes, isotopic records of atmos- pheric and stable isotopes and stable isotopes of plan- etary evolution, mantle dynamics, volcanoes, groundwater, and geothermal systems. The course begins with a short introductory sequence and includes simple mathematical models used in isotope geochemistry. DePaolo  

Biometeorology. (3) Three hours of lecture per week. This course describes how the physical envi- ronment (light, wind, temperature, humidity) of plants and soil affects the physiological growth of plants and how plants affect their physical environment. Using ex- perimental data and theory, it examines physical, bi- ological, and chemical processes affecting transfer of momentum, energy, and material (water, CO2. atmo-
130. Strong Motion Seismology. (3) Two hours of lecture and one hour of discussion per week. Prerequisites: Mathematics 54, or equivalent and consent of instructor. Formerly Geophysics 130. Generation of seismic waves. Synthetic accelerograms. Instrumentation to measure strong ground motion. Estimation of seismic motion at a site. Ground motion spectra. Influence of soils and geologic structures. Seismic risk mapping.

131. Geochemistry. (4) Three hours of lecture and one hour of discussion per week. Prerequisite: Chemistry 100B. Formerly Geology 131. Geochemistry of the solid earth, oceans, and atmosphere. Plant biometeorology instrumentation and atmospheric trace gases) between vegetation and the atmosphere. Plants are major sources of atmospheric CO2 and the subsurface distribution of oxygen.

C141. Paleoclimatology. (4) 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 system and its capacity for change. In this course we will review important methods for past climate research and current knowledge of past climate changes throughout earth’s history, with an emphasis on those of the Quaternary. Methods to be explored include analyses of physical, geochemical, and paleontological data. An emphasis on current research in the study of the global water cycle; major biogeochemical cycles; and the role of the oceans, atmosphere, and land in regulating Earth’s climate. Three hours of lecture per week.

C146. Geological Oceanography. (4) Three hours of lecture and three hours of laboratory per week. Formerly Geography C146. Formerly Geology 140A-140B. The oceanic and morphological characteristics 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 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 resources. Also listed as Geography C141. Huff, Ingram

C149. The Origin and Evolution of the Solar System. (3) Three hours of lecture per week. Prerequisites: Astronomy 7A-7B recommended but not required; Mathematics 53, 54, Physics 7A-7B-7C or consent of instructor. The story of the solar system. Topics include the solar nebula and modern observations of disks, the formation of the planets, planetary interiors and surfaces, planetary atmospheres and magnetospheres, and magnetic fields in the solar system. The physical processes at work are developed in some detail, and an evolutionary picture of each object is expounded. Some discussion of other (potential) planetary systems is also included. Chiang, de Pater, Spinrad

150. Case Studies in Earth Systems. (2) Two hours of lecture per week. Prerequisites: 50, senior standing or consent of instructor. Analysis and discussion of three research problems on the interactions of solid earth, hydrosphere, atmosphere, and biosphere. Emphasis is on the synthesis and application of the student’s disciplinary knowledge to a new integrative problem in the earth sciences.

C162. Planetary Astrophysics. (4) Three hours of lecture and one hour of discussion per week. Prerequisites: Math 53, 54, Physics 7A-7B-7C. Physics of planetary systems, both solar and extra-solar. Star and planet formation, radioactivity dating, small-body dynamics and interaction of radiation and 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, Marcy

C178. Applied Geophysics. (3) Two hours of lecture and three hours of laboratory/fieldwork exercise 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 Material Science C145, 145L. The theory and practice of inverse methods for determining the subsurface distribution of physical rock and soil properties. Measurements of geometry and magnetic fields, electrical and electromagnetic fields, and seismic velocity are inverted to map the subsurface distribution of density, magnetic susceptibility, electrical conductivity, and mechanical properties. Also listed as Civil and Environmental Engineering C176. (F) Rector

C180. Atmospheric Chemistry. (3) Three hours of lecture and one hour of discussion per week. Prerequisites: Chemistry 100B, Formerly Geology 180. Atmospheric chemistry instrumentation and sources. Also listed as Geography C145. M. Goldstein

181. Atmospheric Physics and Dynamics. (3) Three hours of lecture/discussion per week. Prerequisites: Mathematics 53, 54, Physics 7A-7B-7C and 144. 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; hydrometeors and precipitation; equations for atmospheric motion, mass conservation, and thermodynamic energy balance; geostrophic flow, quasigeostrophic flow, 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, Physics 7A-7B, 7C. Formerly 181. Three hours of lecture per week. The course is designed to develop the student’s ability to apply mathematical and computer methods to solve atmospheric problems. The general objective of the course is to enable students to use mathematical and numerical methods to solve atmospheric problems. Also listed as Geography C139. Chiang, Fung

185. Marine Geobiology. (2) Two hours of lecture per week. Formerly Geology 185. Interrelationships between marine organisms and physical, chemical and geological processes in oceans. (F) Berry

H195. 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 any of the three semesters of senior year and may be substituted for six units of the upper division requirement with consent of major adviser.

198. Directed Group Study. (1-4) Course may be repeated for credit. Group meetings of various lengths. Must be taken on a pass/No pass basis. Formerly Geology 198. Group study of selected topics which vary from semester to semester.

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. Formerly Geology 199. Enrollment is restricted by regulations. (F,SP)

Graduate Courses

200. Problems in Hydrogeology. (4) Three hours of lecture per week. Prerequisites: Physics 7A-7B, Chemistry 1A-1B, Math 53 and 54; open to senior undergraduates with appropriate prerequisites. Formerly Geophysics C200 and Geology C200. Current problems in fluid flow, heat flow, and groundwater hydrology in the Earth. Pressure- and thermal-driven flow, instability, convection, interaction between fluid flow and chemical reactions. Pore pressure; faulting and earthquakes; diagenesis; hydrocarbon migration and trapping; gas flow; halokinesis; contaminant processes.

201. Seminar in Geochemistry. (3) Course may be repeated for credit. Three hours of discussion per week. Prerequisites: Consent of instructor. Formerly Geology 201. Principles and problems in geochemistry.

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. Geochemical analysis; application of chemical thermodynamics and solution chemistry to prediction and interpretation of the consequences of the reversibility and 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 processes governing the distribution of chemical species 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 geochemical modeling.

204. Elastie Wave Propagation. (3) Three hours of lecture per week. Prerequisites: 104 or equivalent; 121; Physics 105s. Formerly Geophysics 204. Wave propagation in elastic solids; effects of anelasticity and anistropy; representation theorems; reflection and refraction; propagation in layered media; finite-difference and finite-element methods.

205. Theoretical Seismology. (3) Three hours of lecture and one hour of discussion per week. Prerequisites: 204 or consent of instructor. Formerly Geophysics 205. Advanced treatment of the generation and propagation of elastic waves in realistic earth models. Lamb’s problem; waves in inhomogeneous media; eigen vibrations; seismic source models; synthetic seismograms.

206. Geophysical Inverse Methods. (3) Three hours of lecture and one hour of discussion per week. Prerequisites: EPS 104 (Formerly Geophysics 104). Formerly Geophysics 206. Survey of various inverse methods available for geophysical problems. Deterministic and statistical, under-determined, and linear and non-linear problems. Concepts of existence, uniqueness, construction, appraisal, resolution, and trade-off curves. Applications to gravity, magnet-
207. Laboratory in Observational Seismology. (3) Three hours of lecture per week. Prerequisites: 121 or 130 or 204 or consent of instructor. Formerly Geophysics 207. Group problem solving of current seismologic topics, involving analysis, interpretation, and numerical modeling of seismogram data to investigate questions regarding the physics of the earthquake source and seismic wave propagation. Application of current developments and techniques in seismologic research.

208. Mechanical Properties of Earth Materials. (3) Three hours of lecture and one hour of discussion per week. Prerequisites: EPS 108 (Formerly Geophysics 108) or course in continuum mechanics. Formerly Geophysics 208. Mechanical properties of rocks and minerals. Finite deformation and thermodynamics of solids under strain. Elasticity, anelasticity, high-temperature creep, and fracture of rocks. Properties of polycrystals and aggregates; the nature of grain boundaries; dislocations and other crystal defects and microstructures.

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 solids, including the nature of elastic constants, spectroscopic, and related data. The emphasis is on high-temperature phenomena, including the nature of melting. Thermal effects and non-equilibrium processes of diffusion and the theory of phase transformations, are also discussed.

210. Advanced Ore Petrology. (3) Course may be repeated for credit. Three hours of lecture and three hours of laboratory per week plus one field trip. Prerequisites: 100A-100B, 108 and 131. Formerly Geology 210. Geological and geochemical evaluation of theories of ore transport and deposition, including field, theoretical, and experimental approaches.

211. Advanced Digital Mapping and Surveying for Scientists, Engineers and Planners. (2) One and one-half hours of lecture and one and one-half hours of laboratory per week. Prerequisites: Consent of instructor. Formerly Geophysics 211. Research mapping and surveying applications for scientists, engineers, and planners. Overview and application of digital mapping systems consisting of portable pen-based computers, global positioning systems, and laser range finders. Development of specific digital media mapping tools suited to individual ground, airborne, and satellite research interest. Visible and infrared spectrometric mapping related to remote sensing and image analysis. Preparation of final project map using GIS systems. Course grade based on oral project presentations. May be repeated for credit. Also listed as Geology 211.

212. Advanced Stratigraphy and Tectonics. (3) Three hours of seminar per week. Prerequisites: Consent of instructor. Formerly Geology 212. Evolution of the earth in response to internal, surficial and extraterrestrial processes.

214. Igneous Petrology. (4) Three hours of lecture and one hour of discussion per week. Prerequisites: Consent of instructor. Formerly Geology 214. The composition, generation, and cooling of magmas to form igneous rocks. The physical and thermodynamic properties of silicate liquids.

215. Active Tectonics. (3) Three hours of lecture per week. Prerequisites: EPS 108 or equivalent, Physics 7A or equivalent, or consent of instructor. Formerly Geology 215. This course is a graduate course designed to introduce students in the earth sciences to the geology of active tectonics. Tectonic geomorphology, paleoseismology and the analysis and interpretation of geodetic measurements of active deformation. While the focus will be primarily on seismically active faults, we will also be exploring the nature of terrestrial tectonic geomorphic processes, on tectonic plates, supercontinents, and smaller bodies in the solar system. Physical processes at work are developed in some detail, and an evolutionary picture for each class of objects is expounded. Some discussion of other (potential) planetary systems is also included. Also listed as Astronomy 215.

220. Advanced Concepts in Mineral Physics. (3) Course may be repeated for credit. Three hours of lecture per week. Prerequisites: Consent of instructor. Formerly Geophysics 220. A combined seminar and discussion course for advanced students related to topics in mineral physics. The interface between geophysics with the other physical sciences is emphasized. Topics vary each semester.

224. 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 use of natural isotopic variations to study earth, planetary, and environmental problems. Topics include geochemistry, cosmogenic isotope studies of surficial processes, radiocarbon and the carbon cycle, water isotopes in the water cycle, and radiogenic and stable isotope studies of planetary evolution, mantle dynamics, volcanoes, and oceanic and geothermal systems. The course begins with a short introduction to nuclear processes and includes simple mathematical models used in isotope geochemistry.

225. Equilibrium, Mass Transfer, and Kinetics in Geochemical Processes. (4) Four hours of lecture per week. Prerequisites: Consent of instructor. Formerly Geology 225. A graduate course covering advanced topics related to the physical processes at work in geochemical systems. Topics vary each semester.

230. Equilibrium, Mass Transfer, and Kinetics in Geochemical Processes. (4) Two hours of lecture per week. Prerequisites: Consent of instructor. Formerly Geology 230. Geologic and geochemical evaluation of theories of ore transport and deposition, including field, theoretical, and experimental approaches. May be repeated for credit. Also listed as Geology 230.

231. Characterization of Minerals and Rocks. (4) Three hours of lecture and three hours of laboratory per week. Prerequisites: Consent of instructor. Formerly Geology 231. Critical study of problems. Course may be repeated for credit. Formerly Geology 231. Application of fluid mechanics to sediment transport and deposition. Application of fluid mechanics to sediment transport and deposition. May be repeated for credit. Also listed as Geology 231.

234. Single and Polycrystal Analysis. (3) Course may be repeated for credit. Three hours of seminar per week. Prerequisites: Consent of instructor. Formerly Geology 234. A graduate-level discussion course focusing on selected topics in structural features of single and polycrystals with emphasis on minerals and rocks. Study of phase transformations and deformation processes. Topics vary from year to year.

235. Characterization of Minerals and Rocks. (4) Two hours of lecture, three hours of laboratory, and one hour of discussion per week. Formerly Geology 235. Application of fluid mechanics to sediment transport and deposition. Application of fluid mechanics to sediment transport and deposition. May be repeated for credit. Also listed as Geology 235.

236. Geological Fluid Mechanics. (3) Three hours of lecture and three hours of laboratory per week. Prerequisites: Continuum/fluid mechanics at the level of 108 or consent of instructor. Formerly Geology 236. An advanced course in the application of fluid mechanics in the earth sciences, with emphasis on the design and scaling of laboratory and numerical models. Topics include: principles of inviscid and viscous flow; dynamical similarity; boundary layers; convection, instabilities; gravity currents; mixing and chaos; porous flow. Applications to mantle convection, magma dynamics, atmosphere and ocean dynamics, sediment/debris flows, and hydrogeology. Topics may vary from year to year.

240. Watershed Hydrology and Biogeochemistry. (3) Three hours of lecture per week. Prerequisites: Consent of instructor. Formerly Geology 240. Advanced graduate course on the use of chemical methods in biogeochemical and biogeochemical studies and in biogeochemical and biogeochemical studies. May be repeated for credit. Also listed as Geology 240.

243. Geochemical Approaches to Modern and Ancient Tectonics. (3) May be repeated for credit. Three hours of seminar per week. Formerly Geology 243. Research seminar graduate course on the use of chemical methods in biogeochemical and biogeochemical studies and in biogeochemical and biogeochemical studies. May be repeated for credit. Also listed as Geology 243.

246. Ocean Drilling. (3) Three hours of lecture per week. Formerly Geology 246. Preparation for final oral presentation. May be repeated for credit. Also listed as Geology 246.

Earth and Planetary Science / 203
servations 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 studies, 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. Formerly Geology 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.

260. Research in Earth Science. (2) Course may be repeated for credit. Two hours of laboratory per week. Formerly Geology 260. Weekly presentations to introduce new graduate students and senior undergraduates to current research conducted in the Department of Earth and Planetary Science.

264. Sedimentary Rocks and Processes. (3) Course may be repeated for credit. Three hours of seminar per week. Formerly Geology 264. Discussion of paleoenvironmental, paleoclimatic, and paleogeographic implications of the geologic record of sedimentary rocks and processes of sedimentation. Focus varies from year to year.

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. Geological mapping, field observation, and problem solving in 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 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)

280. Seminar. (2-6) Course may be repeated for credit. Two to six hours of lecture/discussion per week. Formerly Geology 280. Topics will be announced each semester.

288. Directed Group Study for Graduates. (1-9) Course may be repeated for credit. Occasional group meetings and individual conferences. Section 1 (fall) to be graded on a satisfactory/unsatisfactory basis; other sections may be taken on letter-grade basis.

601. 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. Individual conferences. Must be taken on a satisfactory/unsatisfactory basis. Prerequisites: For candidates for Ph.D. Formerly Geology 602. Individual study in consultation with the major field adviser, intended to prepare facilities of the qualified students to prepare themselves for the various examinations required of candidates for the Ph.D. (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. Individual conferences. Must be taken on a satisfactory/unsatisfactory basis. Prerequisites: For candidates for Ph.D. Formerly Geology 602. Individual study in consultation with the major field adviser, intended to prepare facilities of the qualified students to prepare themselves for the various examinations required of candidates for the Ph.D. (F,SP) Staff

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. (3) 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 to elementary schools. The course will combine instruction in inquiry-based teaching methods and learning pedagogy with 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.

402. Electron Microscopy and X-Ray Diffraction. (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 402. The use of an electron microscope, X-ray diffraction apparatus, and ancillary equipment.

404. Modern Seismological Observatory Techniques. (2) Course may be repeated for credit. Two to three hours of laboratory and one hour of discussion per week. Prerequisites: 204 and graduate standing. Formerly Geophysics 404. Advanced instruction in interpretation and reduction making use of the instrumental and computational techniques of the Seismographic Station. The purpose is to enable graduate students to use analog and digital observations of seismic waves in their research. Staff

East Asian Languages and Cultures
(Title of Letters and Science)

Department Office: 104 Durant Hall, (510) 642-3480
http://ealet.berkeley.edu
Chair: H. Mack Horton, Ph.D.

Professors
H.H. Mack Horton, Ph.D. University of California, Berkeley. Classical Japanese literature
Susan Matsuo, Ph.D. Columbia University. Classical Japanese literature
Jeffrey K. Rieger, Ph.D. Stanford University. Early Chinese texts
Robert Sharf, Ph.D. University of Michigan. Buddhist studies
Alan Tansman (Agassi Professor Emeritus), Ph.D. Yale University. Modern Japanese literature
Haruo Aoki (Emeritus), Ph.D. University of California, Berkeley
Cyril Birch (Agassi Professor Emeritus), Ph.D. University of London
Kun Chang (Emeritus), Ph.D. Yale University
Samuel Hsung-nin Cheung (Emeritus), Ph.D. University of California, Berkeley
John C. Jameson (Emeritus), Ph.D. University of California, Berkeley
David N. Keightley (Emeritus), Ph.D. Columbia University

Lewis R. Lancaster (Emeritus), Ph.D. University of Wisconsin
Michelle Rogers (Emeritus), Ph.D. University of California, Berkeley
Donald H. Shively (Emeritus), Ph.D. Harvard University
Koong-Hing Tung (Emeritus), Ph.D. University of Washington
Stephen West (Agassi Professor Emeritus), Ph.D. University of Michigan. Medieval Chinese literature

Associate Professors
Robert Ashmore, Ph.D. Harvard University. Classical Chinese literature
Yoko Hasagawa, 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
James E. Bosson (Emeritus), Ph.D. University of Washington. Atlasic language
Frank Motolui (Emeritus), Ph.D. Stanford University. Modern Japanese literature

Assistant Professors
Daniel O’Neill, Ph.D. Yale University. Modern Japanese literature
William Schaefer, Ph.D. University of Chicago. Modern Chinese literature and culture
Jiexin Shin, Ph.D. Harvard University. Korean literature
Sophie Volpp, Ph.D. Harvard University. Modern Chinese literature, comparative literature

Senior Lecturers
Cecilia Chu, M.A. University of California, Berkeley

Lecturers
Yasuuko Konno Baker, M.A. University of California, Berkeley
I-Hao Li, M.A. Li Liu, Ph.D. Yoko Kobayashi, M.A.
Hiroko Richards, M.A.
Chika Shibahara, M.A.
Miwako Tomizuka
Ying Yang, M.A.
Clare You, M.A.

Undergraduate and Graduate Advisers: Consult department office.

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)
Honors 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 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 account both the quality of the research and the 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 upper-division 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 aiming solely at modern-language teaching 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
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 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)

Upper Division Courses
100. Reading Alternative Space. (4) Three hours of lecture per week. This course is a wide-ranging investigation of literary and visual practices that hypothesize an alternative sociocultural realm through a travel narrative. We will consider various modes of spatial narration (utopic, dystopic, cosmological, global, nautical, urban, rural, architectural, and institutional) that foreground the motif of a journey. The course focuses particularly on 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

102. Fantastic Histories. (4) Three hours of lecture per week. This course creates a global and historical context for understanding contemporary Chinese 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 Chinese have informed experiments with writing the Latin Americas; 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) Schaefer

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, the complex and violent encounter 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-historical transformations as they are represented in literary, historical, and visual texts produced both in China and Victorian England. (F,SP) Jones

Graduate Courses
200. Proseminar: Approaches to East Asian Studies. (2,4) Three hours of seminar per week. This course introduces theoretical approaches to East Asian studies with an emphasis on China and Japan. We will consider the historical role of philological research, area studies and interdisciplinary scholarship, and will ask how knowledge is produced in our fields. The readings are designed to help interrogate the common sense of “civilization,” “culture,” “tradition,” “identity,” and so on, and to explore new ways of asking questions about text and context, historical narrative, gender, subjectivity, and regimes of knowledge. The course is also intended as a preliminary introduction to the state of the field of East Asia studies. (F)

Chinese

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.

1AX-1BX. Elementary Chinese for Mandarin Speakers. (3,3) Students will receive no credit for 1AX-1BX after passing 1, 1A-1B, or 5. Three hours of lecture per week. Prerequisites: Chinese 1AX is prerequisite to 1BX; consent of instructor. Chinese for students who speak Mandarin but who have minimal exposure to reading or writing.

1AY-1BY. Elementary Chinese for Speakers of Other Dialects. (4,4) Students will receive no credit for 1AY after taking 1, 1A-1B, 1AX-1BX or 5. Four hours of lecture per week. Prerequisites: 1AY is a prerequisite to 1BY. This course is designed for students who already have elementary comprehension and speaking in Chinese dialect other than Mandarin Chinese, the Standard Modern Chinese, and have minimal exposure to reading and/or writing in Chinese. With training in all four languages skills (speaking, listening, reading, and writing), prominence is given to listening and speaking in Mandarin Chinese. This first year course prepares students so they are proficient enough to enter the Mandarin speak track for intermediate language training. (F,SP) Staff

7A-7B. Introduction to Chinese Literature and Culture. (4) Students will receive no credit for 7A after taking 18A. Students can remove a deficient grade in 18A by taking 7A. Three hours of lecture and one hour of discussion per week. An introduction to Chinese literature in translation in a two-semester sequence. In addition to literary sources, a wide range of philosophical and historical texts will be covered, as well as aspects of visual and material culture. 7A covers early and premodern China up to and including the
Yuan Dynasty (14th century); 7B will focus on late imperial, modern, and contemporary China. Course will focus on the development of sound writing skills for freshman/sophomore-level students. (F,SP)  
Staff

10A-10B. Intermediate Chinese. (5,5) Five hours of lecture per week. Prerequisites: 1B, 10A is prerequisite to 10B.  
10AX-10BX. Intermediate Chinese for Mandarin Speakers. (5,5) Three hours of lecture per week. 10AX-10BX after passing 10A or 10-B. Three hours of lecture per week. Prerequisites: Chinese 1B, 10AX is prerequisite to 10BX; consent of instructor. Intermediate level for students who speak Mandarin and have elementary-level knowledge of reading and writing in Chinese.  

24. Freshman Seminar. (1) Course may be repeated for credit as topic varies. One hour of seminar per week for five weeks or two hours of seminar per week for eight weeks. Sections 1 and 2 to be graded on a passed/not passed basis. Sections 3 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, and topics vary from department to department and from semester to semester.  

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 courses with the opportunity to engage in 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.  

50. Comparative Approaches to Chinese 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 Chinese literature and culture, varying with instructor. (F,SP) Staff

80. The Story of the Stone. (4) Three hours of lecture per week. This course centers 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, philosophical, and material world from which this work emerged, as well as various approaches to the world within that text.  

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 interactive courses offered by faculty members in departments all across the campus. Sophomore seminars offer opportunity for close, regular intellectual contact between students and the instructor in the 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, Independent study in topics not covered by regularly scheduled courses. (F,SP)  

101A. Introduction to Literary Chinese. (4) Three hours of lecture per week. Prerequisites: 10B is recommended. 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 for this semester will be drawn from Mencius, an important philosophical text of the Warring States period. (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 grammar 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 works. Course will consist of lectures with topics to be drawn from early historiographical texts. (F) Staff

120. Ancient Chinese Prose. (4) Three hours of lecture per week. Prerequisites: 2A. Readings in historical, religious, and philosophical texts of the Zhou and Han periods from printed and manuscript sources.  

122. Ancient Chinese Poetry. (4) Three hours of lecture per week. Prerequisites: 2B and 100B. Readings from the Shijing, the poetic parts of the I Ching, the Chu Ci, and selections from Han dynasty fu.  

132. Readings in Chinese Drama. (4) Three hours of lecture per week. Prerequisites: 2B and one upper division course in classical Chinese. A different theme or literary form will be studied each semester.  

134. Readings in Later Medieval Poetry. (4) Three hours of lecture per week. Prerequisites: 2B. Analysis of semantic, structural, and sonorous aspects of poetry from the Tang, Five Dynasties, and Sung periods, to reveal how their interplay makes poetry.  

136. Readings in Late Medieval Prose. (4) Three hours of lecture per week. Prerequisites: 2B. Philological, grammatical, and literary analysis of prose texts from the Sung, Chin, and Yuan periods. Texts will include ku- wen essays, historical works, funerary inscriptions and epitaphs, scholars’ notes (pi-chi), administrative documents including memorials and receipts, and writings on classical scholarship and thought.  

138. Readings in Chinese Drama. (4) Three hours of lecture per week. Prerequisites: 2B and upper division literature course in any language. This course surveys modern Chinese literature from the May Fourth period through the 1940’s. Course will examine the changing practice of literature in 20th-century China in the larger context of Chinese revolution, nationalism, language reform, and the rise of Chinese Marxists.  

157. Contemporary Chinese Literature. (4) Three hours of lecture per week. Prerequisites: 100B and upper division literature course in any language. This course surveys contemporary Chinese literature from the 1950’s to the present. Topics include language and identity, literature and politics, the rise of the transnational market economy, media and gender politics with special attention to the post-Mao and post-cold-war era.  

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.  

165. History of the Chinese Language. (4) Three hours of lecture per week. Prerequisites: 100A, Linguistics 5 or 100. Writing system, early dictionaries, historical phonology, and classical grammar.  

180. The Story of the Stone. (4) Three hours of lecture per week. Formerly 80. This course centers 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), and discusses the social, cultural, philosophical, and material world from which this work emerged, as well as various approaches to the world within the text.  

183. Traditional Chinese Culture. (4) Three hours of lecture per week. Formerly N183; Oriental Languages 116. This course will consist of a general overview of traditional Chinese culture from the early Zhou through the Tang (the 1st millennium BCE through the 9th century of this era). 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 Wang Kansas, Confucian philosophy, the philosophical and religious traditions of 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 and the beginnings of Chinese medicine. (F,SP)

184. Sonic Culture in China. (4) Three hours of lecture per week. Prerequisites: 7A or 7B, and/or previous course work in either Chinese literature and culture, or music. This course explores the aesthetics and politics of sound in 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 modern and post-Mao China. Topics include Confucian musical theory, Daoist hermeneutics, music and politics; the impact of recording technology and Western music; urban popular musics, sound and cinema, and contemporary soundscapes. (F,SP)
C184. Sonic Culture in China, (4) Three hours of lecture and one hour of discussion per week. Prerequisites: 7A or 7B, and/or previous course work in either Chinese language and culture, or music. This course explores the politics and aesthetics of sonic and specialized concepts in both modern and modern China. Topics include Confucian musical theory, Daoist hermeneutics, music, and poetry; the impact of recording technology and Western music; urban soundscapes; travel, and folk theater, urban consumer culture, state policy, and the rise of a national cinema.

189. Chinese Landscapes: Space, Place, and Travel. (4) Three hours of lecture per week. Prerequisites: 230. Seminar in Chinese Literary History. (2,4) Hours to be arranged. Must be taken on a passed/not passed basis. Prerequisites: 1AS is prerequisite to 1B. Sections 2 and 4 to be passed/not passed basis. Prerequisites: 1AS is prerequisite to 1B. A course designed to be taken concurrently with 1A or 1B to help students improve overall kanji performance. The course will make the kanji learning process easier by providing exercises and background information about the relationships between characters and how they function.

7A. Introduction to Japanese Literature and Cultural Context. (4) Students will receive no credit for 7A after taking 182B. Students can receive a deficient grade in 182A by taking 7A. Three hours of lecture and one hour of discussion per week. The first half of a two-semester survey of Japanese literature in English translation. 7A covers one thousand years of Japanese writing, including a myth-history detailing the origins of Japan, the development of the rich poetic tradition, female diaries, the classic, the Tale of Genji, medieval tales of war and heroism, the no-drama, and the haiku and travel diaries of Basho. It will focus on such key binaries as orality and literacy, poetry and prose, native and foreign, and masculine and feminine. The course will also stress student writing and principles of literary analysis. (F,SP) Staff

Japanese
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 Japanese. (5,5) Five hours of lecture per week. Prerequisites: 1A is prerequisite to 1B.

1A5-1B5. Supplementary Work in Kanji. (1,1) One hour of lecture per week. Must be taken on a passed/not passed basis. Prerequisites: 1A5 is prerequisite to 1B5. A course designed to be taken concurrently with 1A or 1B to help students improve overall kanji performance. The course will make the kanji learning process easier by providing exercises and background information about the relationships between characters and how they function.
granted 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 semester to semester.

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 their first 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.

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. Course requires significant reading assignments in addition to class time.

80. Japanese Culture. (4) Three hours of lecture per week. Prerequisites: Lower-division standing. Introduction to Japanese culture from its origins to the present. Prehistory; literary, artistic, religious, and political developments; modern economic growth, and the nature of contemporary society, education, and business. Class conducted in English.

84. Sophomore Seminar. (1,2) Course may be repeated for credit as topic varies. One hour of seminar per week for five 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 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 all 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 year to year 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 limited to one and one-half hours per week per unit for eight weeks. Sections 1-2 to be graded on a pass/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 pass/not passed basis. Prerequisites: 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) Five hours of lecture per week. Prerequisites: 10B; 100A is prerequisite to 100B. Readings in modern Japanese. Expository writings and fiction.

100S. Japanese for Sinologists. (4) Course may be repeated for credit. Three hours of lecture per week. Prerequisites: Graduate standing; 10B and 100S (equivalent). Students will be trained to read, analyze, and translate modern Japanese scholarship on Chinese subjects. A major purpose of the course is to prepare students to take reading examinations in Japanese. The areas of scholarship to be covered are: politics, philosophy, sociology, economy, technology as well as areas suggested by students who are actively engaged in research projects. Two readings in each area will be assigned, one by the instructor and the second by a student participant.

101. Fourth-Year Japanese A. (4) Course may be repeated for credit. Three hours of lecture per week. Prerequisites: 100B or consent of instructor. This course is designed for students who have studied Japanese at least at the 100B level and who have an interest in developing further their reading, writing, speaking, and listening skills so that they can utilize Japanese newspapers, magazines, and other media to gather information and write a short research paper. Although much of class time will be devoted to reading-oriented activities, students are also expected to participate actively in listening exercises and related discussions. Audio-visual materials will be used to enhance the understanding of the reading materials.

102. Fourth-Year Japanese B. (4) Course may be repeated for credit. Three hours of lecture per week. Prerequisites: 100B or consent of instructor. An advanced course in the reading and analysis of specialized texts in modern Japanese; 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 Japanese.

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 to study advanced Modern Japanese for at least four years (540 hours). It aims to develop further their reading, writing, speaking, and listening skills so that they can utilize Japanese materials for 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 Modern Japanese for at least four years (540 hours). It aims to develop further their reading, writing, speaking, and listening skills so that they can utilize Japanese materials for 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.

120. Introduction to Classical Japanese. (4) Three hours of lecture per week. Prerequisites: 10B.

130. Classical Japanese Poetry. (4) Three hours of lecture per week. Prerequisites: 120.

132. Nikki Literature, Tenth to Fourteenth Centuries. (4) Three hours of lecture per week. Prerequisites: 120.

140. Heian Prose. (4) Three hours of lecture per week. Prerequisites: 120.

142. Japanese Medieval Prose. (4) Three hours of lecture per week. Prerequisites: 120.

144. Edo Literature. (4) Three hours of lecture per week. Prerequisites: 120. Critical reading of important literary texts from the Edo period, including poetic dairies, merchant fiction, and joruri drama.

146. Japanese Historical Documents. (4) Three hours of lecture per week. Prerequisites: 100A or 120. Formerly 175. Review of the language of historical texts and kambun, and the reading of Tokugawa and early Meiji documents.

155. Modern Japanese Literature. (4) Course may be repeated for credit as topic varies. Three hours of lecture per week. Prerequisites: 100B or consent of instructor. Critical reading of selected literary works from the Meiji through Showa periods.

159. Contemporary Japanese Literature. (4) Three hours of lecture per week. Prerequisites: 100B.

160. Introduction to Japanese Linguistics: Grammar. (4) Three hours of lecture per week. Prerequisites: 100A or equivalent (may be taken concurrently). This course deals with issues of the structure of the Japanese language and how they have been treated in the field of linguistics. It focuses on phonetics/phonology, morphology, writing systems, dialects, lexicon, and syntax/semantics. Students are required to have completed knowledge of Japanese. No previous linguistics training is required. (F,SP) Hasegawa

161. Introduction to Japanese Linguistics: Usage. (4) Three hours of lecture per week. Prerequisites: 100B or equivalent (may be taken concurrently). This course deals with issues of the usage of the Japanese language and how they have been treated in the field of linguistics. It concentrates on pragmatics, speech varieties (politeness, gender, written vs. spoken), topic management, historical changes, and genetic origins. Students are required to have completed knowledge of Japanese. No previous linguistics training is required. (F,SP) Hasegawa

162. History of the Japanese Language. (4) Three hours of lecture per week. Prerequisites: 100A (may be repeated for credit). Three hours of lecture per week. This course surveys Japanese poetry and prose written predominantly in or before the Heian Period (794-1185). Topics will vary. (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

180. Ghosts and the Modern Literary Imagination. (4) Three hours of lecture per week. The course examines the complex meanings of the ghost in modern Japanese literature and culture. Tracing the representations of the supernatural in drama, fiction, ethnography, and the visual arts, we explore how ghosts provide the basis for remarkable flights of imaginative speculation and literary experimentation. Topics may include: storytelling and the loss of cultural identity, horror and its conversion into aesthetic pleasure, fantasy, and the transformation of the commonplace. We will consider historical, visual, and theoretical approaches to the supernatural and raise cultural and philosophical questions crucial to an understanding of the figure and its role in the greater transformation of modern Japan (18th century to the present).

183. Gender and Nationalism in Japanese Literature and Film. (4) Course may be repeated for credit as topic varies. Three hours of lecture per week. The historical production and reception of key Japanese literary and film texts, how ideas of gender, class, and national identity specific to each text address changing economic and social conditions in Japan. The place of women authors in the Japanese literary canon; the representation of female characters in various eras; the significance of gender construction within codes of nationalism; how gendered Western perspectives toward Japan inform or distort these questions.

185. Introduction to Japanese Cinema. (4) Course may be repeated for credit as topic varies. Three hours of lecture per week. This course will offer a survey of Japanese cinema from its earliest days to contemporary anime (animated film). Providing the basic tools for analyzing film language, the course begins by analyzing the interactions between early Japanese film and early Hollywood. We then consider the development of Japanese film, discussing style and structures of connotation, figural meaning and political critique.
the uses of the historical past and ideology, and the roles of youth culture and views of the family. We consider the (sometimes anomalous) place of important individual directors, with a special emphasis on 1960s New Wave cinema and experimental film. We discuss current critical debates about broader trends in 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: noh, bunraku (puppet theater), and kabuki. Readings will consist of translations of plays and English 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 one to two hours of discussion/studio 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, 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 on a pass/not pass basis. Prerequisites: Junior standing. Independent study in topics not covered by regularly scheduled courses. (F,SP)

Graduate Courses

230. Seminar in Classical Japanese Poetry. (2,4) Three hours of seminar per week. Prerequisites: 120, 130, 134 or 140. Analysis and discussion of major poems of the Heian and Kamakura periods. Selections from the works of Zeami and Chikamatsu will be made in a ternary context.

240. Seminar in Classical 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.

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. This seminar examines several types of premodern Japanese drama along with traditions in order to explore the limits of significance of genre distinctions.

255. Seminar in Prewar Japanese Literature. (2,4) Three hours of seminar per week. Prerequisites: Graduate standing and consent of instructor. Reading and critical evaluation of selected texts in prewar (1868-1940) Japanese fiction, drama, or poetry.

259. Seminar in Postwar Japanese Literature. (2,4) Three hours of seminar per week. Prerequisites: Graduate standing and permission of instructor. Reading and critical evaluation of selected texts in postwar (1940-present) Japanese fiction, drama, or poetry.

269. Seminar in Japanese Linguistics. (2,4) Three hours of seminar per week. Prerequisite: 120 or of selected topic, at the discretion of instructor. The topic varies according to the interests of the participants: dialectology, phonology, or syntax and semantics.

298. Directed Study for Graduate Students. (1-8) Hours to be arranged. Special tutorial or seminar on selected topic not covered by available courses or seminars. (F,SP)

39. 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. 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 the student an opportunity for qualified students to prepare for various examinations required of candidates for the Ph.D. (F,SP)

Buddhism

Instructor approval is recommended for enrollment in language courses.

Courses numbered 180-189 are lecture courses given in English.

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 the opportunity to explore an intellectual area of interest with 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 the Study of Buddhism. (4) Three hours of lecture and one hour of discussion per week. This introduction to the study of 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 survey; rather than aiming at breadth, the course is designed around key themes such as ritual, visual representation, 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. (F,SP) Staff

C50. Introduction to the Study of Buddhism. (4) Three hours of lecture and one hour of discussion per week. This introduction to the study of 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 survey; rather than aiming at breadth, the course is designed around key themes such as ritual, visual representation, 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. (F,SP) Staff

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 pass/not pass 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. Lower Division courses of a pass/not pass basis. Prerequisites: Lower division standing, 3.5 GPA. Independent study in topics not covered by regularly scheduled courses. (F,SP)

Upper Division Courses

114. Tibetan Buddhism. (4) Three hours of lecture per week. This course is a broad introduction to the history, doctrine, and culture 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. (F,SP) Staff

115. Japanese Buddhism. (4) Three hours of lecture per week. A critical survey of the main themes in the history of Japanese Buddhist thought, from its earliest manifestations through modern scholarship. The course covers the transmission of Buddhism from China and Korea to Japan; the subsequent evolution in Japan of the Tendai, Shingon, Jodo Rinji, 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.” (F,SP) Staff

120. Buddhism on the Silk Road. (4) Three hours of lecture per week. This course is both an historical introduction to the Silk Road as an ever-changing system 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, archaeological, 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. (F,SP) Staff

124. Buddhism and Film. (4) 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, the class is intended from the beginning as a way for students to reflect back on the nature and power 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 epistemic status of the viewing subject, 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. (F,SP) Staff

128. Buddhism and Contemporary Society. (4) Three hours of lecture per week. Formerly 182. A study of the Buddhist tradition as it is found in contemporary East Asia. The course will focus on China, Korea, Japan, Singapore, Taiwan, and China (Tibet). Students will be asked to explore the relationships that exist between Buddhism and other religious traditions, as well as political, social, and economic factors which are influencing its development. (F,SP) Staff

130. Zen Buddhism. (4) Three hours of lecture and one hour of discussion per week. Prerequisites: One lower division course in Asian religion recommended. 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 explore a range of hermeneutic problems (problems involved in interpretation) entailed in understanding a sophisticated religious text. Students will be expected to read and in a time and culture very different from our own. (F,SP) Staff

H195B. Honors Course. (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 major GPA, 3.3 overall. Directed independent study of senior honors synthesis. 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 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

200. Seminar in Buddhism and Buddhist Texts. (2,4) Three hours of seminar per week. Content varies with student interest. (F,SP)

222. Readings in Chinese Buddhist Texts. (2,4) Course may be repeated for credit as topic varies. Three hours of seminar per week. Prerequisites: Consent of instructor. This seminar is an intensive introduction to various genres of Buddhist literature in classical Chinese, including translations of Sanskrit and Central Asian Buddhist literature in Chinese commentaries, historical 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 Asian Buddhism. The content of the course will be adjusted from semester to semester to best accommodate the needs and interests of students. (F,SP) Sharf

225. Readings in Japanese Buddhist Texts. (2,4) Course may be repeated for credit. Three hours of seminar per week. Prerequisites: Consent of instructor. This graduate seminar serves as an introduction to a broad range of Japanese Buddhist literature belonging to different historical periods and genres, including (1) liturgical texts; (2) monastic records, rules, and ritual manuals; (3) doctrinal treatises; (4) biographies of saints; 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 the readings in the original languages, which are classical Chinese (Kanbun) and classical Japanese. The seminar will also serve as a “tools and methods” course, covering basic reference works for the study of Japanese Buddhist literature as well as secondary scholarship in Japanese. The content of the course will be adjusted from semester to semester to accommodate the needs and interests of the students. (F,SP) Staff

240. 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: One year of classical Chinese or Kanbun, as well as familiarity with East Asian history and culture. 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 graduate students working on premodern Chinese and Japanese religious literature (literature, philosophy, intellectual history, religion, art, etc.). The seminar will also introduce students to Asian and Western language reference tools for the study of East Asian Buddhist texts, including web resources. The content of the course will vary from semester to semester to best accommodate the needs and interests of students. (F,SP) Sharf

298. Directed Study for Graduate Students. (1-4) 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. 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)

Korean

Instructor approval is recommended for enrollment in language courses.

Courses numbered 180-189 are lecture courses given in English. (F,SP)

Lower Division Courses

1A-1B. Elementary Korean. (5) Five hours of lecture per week. Prerequisites: 1A is prerequisite to 1B.

1AX-1BX. Elementary Korean for Heritage Speakers. (3,3) Students will receive no credit for 1AX-1BX after taking 1 or 1A-1B. Three hours of lecture per week. Prerequisites: 1AX is a prerequisite to 1BX. 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) Staff

7A. Introduction to Pre-Modern Korean Literature and Culture. (4) Students will receive no credit for 7A after taking 17A. Students can remove deficient grade in 17A by taking 7A. 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 literat cultural, gender relations, humor, and material culture. Texts to be examined include ritual songs, siro, kasa, pansori, prose narratives, art, and contemporary media representation of performance traditions. All readings are in English. (F,SP) Staff

7B. Introduction to Modern Korean Literature and Culture. (4) Students will receive no credit for 7B after taking 17B. Students can remove deficient grade in 17B by taking 7B. Three hours of lecture per week. A survey of modern Korean literature and culture in the 20th century, focusing on the development of national aesthetics in both North and South Korea. Topics include the “new woman” narratives, urban 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) Staff

10A-10B. Intermediate Korean. (5,5) Five hours of lecture per week. Prerequisites: 1B; 10A is prerequisite to 10B.

10AX-10BX. Intermediate Korean for Heritage Speakers. (3,3) Three hours of lecture per week. Prerequisites: 10A is a 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) Staff

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 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. Independent study in topics not covered by regularly scheduled courses.

Upper Division Courses

100A-100B. Advanced Korean. (4,4) Three hours of lecture per week. Prerequisites: 10B; 100A is prerequisite to 100B.

101. Fourth-Year Readings—Literature. (4) Course may be repeated for credit. Three hours of lecture per week. Prerequisites: 100B. An advanced course in the reading and analysis of literary texts in Korean. 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—Social Sciences and History. (4) Course may be repeated for credit. Three hours of lecture per week. Prerequisites: 100B. 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.

130. Genre and Occasion in Traditional Poetry. (4) Three hours of lecture per week. Prerequisites: 100B or equivalent. This course will examine the major traditional verses in hyangga, siro, kasa, hanji, and kansa and consider the performative and cultural contexts of their compositional practice before the 20th century. The course is intended to introduce key verse forms as well as basic reading knowledge of pre-modern Korean texts. Some reading knowledge of classical Chinese would be helpful but is not required. (F,SP) Shin

140. Narrating Persons and Objects in Traditional Korean Prose. (4) Course may be repeated for credit as topic varies. Three hours of lecture per week. This course is a critical exploration of the broad range of prose literature before the 20th century, including vernacular fiction, memoirs, travel accounts, and essays. Particular attention will be given to narrative styles, issues of personal identity, and a link between literary texts and material cultural in the development of prose 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. Some reading knowledge of classical Chinese would be helpful but is not required. (F,SP) Shin

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155. Modern Korean Prose. (4) 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. Readings include major 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. (4) Three hours of lecture per week. Prerequisites: 100B or equivalent. This course surveys contemporary Korean literature, focusing on the separate development of language, creativity, and nationalism in North and South Korea from the end of the Korean War 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 involving post-colonial cultural production: war and trauma, gender and labor, political violence and presentation, modernization and dislocation, and diaspora. Topics will vary. (F,SP) Shin

160. Korean Linguistics. (4) Three hours of lecture per week. Prerequisites: 100B or equivalent. This is a basic introductory course in contemporary Korean linguistics. The course will explore the Korean language from several perspectives: phonetics, phonology, grammar, semantics, orthography, and the history of the Korean language. (F,SP) Staff

163. Translation: Theory and Practice. (4) Three hours of lecture per week. Prerequisites: 100B or equivalent. This course will provide an overview of the considerations that a translator must take into account when translating Korean text. Special attention will be paid to the structural and linguistic differences between Korean and English as well as cross-cultural differences in the receiver's views to be considered in translation from both expository and literary writings in Korean. By means of translating selected texts in English, students will acquire abilities to recognize common translating problems, explore methods for finding solutions, and evaluate translation’s communicative effectiveness of translation. (F,SP) Staff

180. Critical Approaches to Modern Korean Literature. (4) Course may be repeated for credit as topic varies. Three hours of lecture per week. Prerequisites: One upper division literature course. This course introduces various critical approaches to modern Korean literature through a set of texts in English translation. Readings will include an assortment of works of fiction, poetry, literary criticism, and visual media. Emphasis is on close reading of texts, while considering the nature of scholarly approaches to the texts. (F,SP) Shin

207A. Major Issues in Korean Literature and Culture. (4) 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 modern Korean literature and cultural history. We will explore the ways in which scholarship in the field has developed and pursued analytical approaches, and possibilities for critical intervention. Emphasis will be on the late Choson development of the major scholarship on premodern Korean literature and language. (F,SP) Shin

207B. Major Issues in Korean Literature and Culture. (2,4) 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 modern Korean literature and cultural history. We will explore the ways in which scholarship in the field has developed and pursued analytical approaches, and possibilities for critical intervention. Emphasis will be on the late Choson development of the major scholarship on premodern Korean literature and language. (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. Must be taken 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 for the comprehensive or language requirements in consultation with the graduate adviser. Units may not be used to meet either 100 or 101B requirements for a master’s degree. (F,SP) Staff

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) Staff

Tibetan

1A-1B. Elementary Tibetan. (5-5) Five hours of lecture per week. Prerequisites: 1A is prerequisite to 1B. This course is an intensive introduction to both standard spoken Tibetan (Lhasa dialect) and written literary Tibetan. As such, it will serve the needs of students who intend to continue the study of modern Tibetan so as to function in a Tibetan-speaking environment, as well as the needs of students who will concentrate on the modern vernacular Tibetan and its related dialects.

10A-10B. Intermediate Tibetan. (5-5) Five hours of lecture per week. Prerequisites: 1B is prerequisite to 10A. This course, a continuation of 1A-1B, is designed to develop the student’s reading, writing, listening, and speaking abilities in standard Tibetan (Lhasa dialect). The course continues the study of modern vernacular Tibetan as well as literary Tibetan, with a particular emphasis on reading classical Buddhist materials. (F,SP) Staff

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. (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: Junior standing. Small group instruction in topics not covered by regularly scheduled courses. (F,SP) Staff

100A-100B. Advanced Tibetan. (5-5) Five hours of lecture per week. Prerequisites: 10A. 100A is prerequisite to 100B. This course builds on the two previous years of Tibetan language training. Students will work toward advanced facility in reading, speaking, and writing standard Tibetan (Lhasa dialect), as well as reading literary Tibetan, with particular emphasis placed on Buddhist literature. (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 passed/not passed basis. Prerequisites: Junior standing. Small group instruction in topics not covered by regularly scheduled courses. (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 passed/not passed basis. Prerequisites: Junior standing. Small group instruction in topics not covered by regularly scheduled courses. (F,SP) Staff

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) Staff

290. Dissertation. (1-12) Hours to be arranged. Must be taken on a satisfactory/unsatisfactory basis. Prerequisites: Must be passed in 299. (F,SP) Staff

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) 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 for the comprehensive or language requirements in consultation with the graduate adviser. Units may not be used to meet either 100 or 101B requirements for a master’s degree. (F,SP) Staff

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) Staff

Graduate Courses

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) Staff

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) 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 for the comprehensive or language requirements in consultation with the graduate adviser. Units may not be used to meet either 100 or 101B requirements for a master’s degree. (F,SP) Staff

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) Staff

B prefix=language course for business majors
C prefix=cross-listed course
AC suffix.course satisfies American cultures requirement
* Professor of the Graduate School
†Recipient of Distinguished Teaching Award
Economics
(College of Letters and Science)

Department Office: 548 Evans Hall, (510) 642-0822
Chair: Richard J. Gilbert, Ph.D.

Professors
George A. Akerlof (Daniel E. Koshland, Sr. Distinguished Professor of Economics; Nobel Laureate, 2001), Ph.D. Stanford University. Industrial organization, economics of information, monetary theory
Robert M. Anderson (Professor of Mathematics and Economics), Ph.D. Yale University. Mathematical economics
Alan Auerbach (Robert D. Burch Professor of Economics and Law), Ph.D. Harvard University. Public finance, macroeconomics
Pranab K. Bardhan, Ph.D. Cambridge University. Development economics
R. Clair Brown (Chair, Center for Work, Technology and Society of the Institute of Industrial Relations), Ph.D. University of Maryland. Labor economics
David Card (Class of 1950 Professor of Economics), Ph.D. Princeton University. Labor economics
Roger Craine, Ph.D. University of Maryland. Macroeconomics
Jan de Vries (Vice Provost of Academic Affairs and Faculty, Sidney Helfman Ehrman Professor of History), Ph.D. Yale University. Labor market economics, environment and urbanization
J. Bradford DeLong, Ph.D. Harvard University. Economic history, macroeconomics, economic growth
Aaron Edlin (Professor of Economics and Law), Ph.D. Stanford University. Industrial organization, labor and economics, public economics
Barry Edgington (George C. Pardee and Helen N. Pardee Professor of Economics and Political Science), Ph.D. Yale University. Macroeconomics, international economics
Joseph Y. Farrell, Ph.D. Oxford University. Microeconomics, behavioral economics
Richard J. Gilbert, Ph.D. Stanford University. Industrial organization
Steven M. Goldman, Ph.D. Stanford University. Economic theory
Breno Wo H. Hall, Ph.D. Stanford University. Applied econometrics and industrial organization, economics of technology
Benjamin E. Herrman (Wills H. Booth Professor of Banking and Finance and Professor of Economics), Ph.D. Massachusetts Institute of Technology. Economics of organization, contract theory, corporate governance
Guido Imbens (Professor of Economics and Agriculture and Resource Economics), Ph.D. Brown University. Econometrics
Charles I. Jones, Ph.D. Massachusetts Institute of Technology. Macroeconomics, economic growth
Michael Katz (Arnold Professor of Business Administration and Professor of Economics), Ph.D. Oxford University. Industrial organization and applied theory
Theodore E. Keeler, Ph.D. Massachusetts Institute of Technology. Industrial organization, health economics, transportation economics
Richard Lee (Edward G. and Nancy S. Jordan Professor of Economics), Ph.D. University of Chicago. American political economy
Daniel L. McFadden (Emeritus)
Matthew Robin (Edward G. and Nancy S. Jordan Professor of Economics), Ph.D. Massachusetts Institute of Technology. Econometrics, game theory
Michael Reich (Research Director, Institute for Labor and Employment), Ph.D. Harvard University. Political economies, labor
Gerard Roland, Ph.D. Université Libre de Bruxelles (ULB), Université Paris 1. Macroeconomics, monetary economics
Christina D. Romer (Class of 1957 Garff B. Wilson Professor of Economics and Professor of Microeconomics), Ph.D. Massachusetts Institute of Technology. Economic history, macroeconomics
David Romer (Herbert H.何 Weatherhead Professor of Political Economy), Ph.D. Massachusetts Institute of Technology. Macroeconomics, monetary theory
Daniel Rubinstein (Roberto Calderoli Professor of Law, Professor of Economics), Ph.D. Massachusetts Institute of Technology. Public Economics, law and economics, antitrust policy
Paul Ruud, Ph.D. Massachusetts Institute of Technology. Economics, statistics, labor economics
Guido Imbens (Transamerica Professor of Business Strategy), Ph.D. Massachusetts Institute of Technology.
Lula D. Tyson (Class of 1939 Professor of Economics and Business Administration), Ph.D. Massachusetts Institute of Technology. Comparative economic systems, economic development and planning, international trade, macroeconomics
Hal Varian (Class of 1944 Professor, and Professor of Business Administration and Information Management and Systems), Ph.D. University of California, Berkeley. Information technology, artificial intelligence, technology
Janet Yellen (Eugene E. and Catherine M. Trehelen Professor of Business Administration), Ph.D. Yale University. Macroeconomics, monetary economics, international economics
Iris Adelman, Ph.D. (Emeritus)
George Breake, Ph.D. (Emeritus)
Alister Fishlow, Ph.D. (Emeritus)
David Gale, Ph.D. (Emeritus)
Gregory Grossman, Ph.D. (Emeritus)
Charles J. Hitch, M.A.L.D. (Hon.), D.Sc. (Hon.) (Emeritus)
John M. Letch, Ph.D. (Emeritus)
James L. Pierce, Ph.D. (Emeritus)
Thomas J. Rothenberg, Ph.D. (Emeritus)
Stephen Smale, Ph.D. (Emeritus)
Lloyd Ulman, Ph.D. (Emeritus)
Benjamin N. Ward, Ph.D. (Emeritus)
*Oliver Williamson, Ph.D. (Emeritus)

Associate Professors
Kenneth Y. Chay (Michael P. Prevee and Donald Viall Career Development Associate Professor, Ph.D. Princeton University. Labor economics, microeconomics, empirical microeconomics
Chang-Tai Hsieh, Ph.D. University of California, Berkeley. Labor economics, macroeconomics
Enrico Moretti, Ph.D. University of California, Berkeley. Labor economics, Econometrics
Emmanuel Saure, Ph.D. Massachusetts Institute of Technology. Public finance

Assistant Professors
David S. Ahe, Ph.D. Stanford University. Econometric theory, mathematical economics
D. Chetty, Ph.D. Harvard University. Public finance, applied theory
Stefano DellaVigna, Ph.D. Harvard University. Behavioral economics
Pierre-Olivier Gourinchas, Ph.D. Massachusetts Institute of Technology. Macroeconomics, international macroeconomics, finance
Michael Janson, Ph.D. Aarhus University. Econometrics Shachar Kariv, Ph.D. New York University. Economic theory, experimental and behavioral economics
Bartoloz Koszegi, Ph.D. Massachusetts Institute of Technology. Economics of organization, public finance
David Lee, Ph.D. Princeton University. Labor economics, applied microeconomics
Alexandre Moss, Ph.D. Princeton University. Labor economics, applied econometrics
Edward Miguel, Ph.D. Stanford University. Econometric theory, finance

Adjunct Professors
Francis K. Krey, Ph.D. University of California, Berkeley. Economic history, macroeconomics, of economics of discrimination
Kenneth E. Trum, Ph.D. University of California, Berkeley. Applied econometrics, regulation
Glenn A. Worswick, Ph.D. University of California, Berkeley. Industrial organization, regulation, telecommunications economics

Admission to the Major

The major may be declared in the sophomore or junior year, before the fall, spring, or summer session. A departmental application is required. Berkeley students are asked to file an application for admission, available in 543 Evans Hall during the first four weeks of spring, summer, and fall. Transfer students should speak with the undergraduate adviser regarding when to apply. Although many factors are considered in determining admission to the economics major, the main criteria are academic performance as measured by GPA in prerequisite courses (see prerequisites listed below). Unfortunately, because of large enrollments and limited resources available, it has proved necessary to restrict the number of economics majors. Therefore students are encouraged to read the Economics Undergraduate Program Handbook, which gives up-to-date information about economics courses and requirements. Handbooks are available online at http://elsa.berkeley.edu/econ/ugrad/ughandbook04-05.html.

Undergraduate Major Program

Prerequisites: One year of calculus (Mathematics 1A-1B or Mathematics 16A-16B) and one semester of statistics: either Statistics 20, 21, 25, 101, 102, 131A or 134 (the statistics course must have a calculus prerequisite); Economics 102; and Economics 100A or 100B or 101A. At least one semester of the calculus/statistics requirement must be completed at UC Berkeley.

Major Requirements: Economics 100A and 100B, or 101A and 101B, Economics (either Economics 140A or 141) and 147. In addition, two upper division economics courses must be taken. All courses must be taken on a letter-graded basis (please see handbook).

Avising: All majors are encouraged to consult with faculty advisers and the undergraduate adviser frequently in planning their programs. Students planning to do graduate work in economics are urged to take more quantitative courses in economics.

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 both advisers written in the senior year, and (b) the student's course grade record overall and in the major. The minimum major GPA requirement for an upper division economics major is 3.0. The honors 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 http://em-lab.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, terminal 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 international M.A. degree are as follows: (1) course work in economic theory equivalent to Economics 101A-101B, 200A-200B, or 201A, 202A; (2) completion of 24 units of approved course work, 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 (J.D.) while preparing for the Ph.D. in Economics. In four years, a well-prepared student can receive the law degree and also complete the pre-thesis requirements for the Ph.D. Further information may be obtained from the graduate adviser of the Department of Economics.

Lower Division Courses

1. Introduction to Economics. (4) Students will receive 2 units of credit for 1 after taking Economics 3 or Environmental Economics and Policy 1; no credit after taking Economics 2. Two hours of lecture and two hours of discussion per week. A survey of economics designed to give an overview of the field. (F,SP) Staff

2. Introduction to Economics—Lecture Format. (4) Students will receive no credit for 2 after taking 1; 2 units after taking 3 or Environmental Economics and Policy 1. Three hours of lecture and one hour of discussion per week. The course provides a survey of economic principles and methods. It covers both microeconomics, the study of consumer choice, firm behavior, and market interaction, and macroeconomics, the study of national 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 the number of hours of lecture per week and can thus cover topics in greater depth. It is particularly appropriate for intended economics majors. (SP) Staff

C3. Introduction to Environmental Economics and Policy. (4) Students will receive two units of credit for C3 after taking Economics 1. Three hours of lecture and one hour of discussion per week. Prerequisites: Mathematics 32. Formerly 3. Introduction to microeconomics with emphasis on resource, agricultural, and environmental issues. Also listed as Environmental Economics and Policy C1. (F,SP) Staff

24. 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 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. Freshman seminars are offered by departments and campus departments. Topics vary from department to department and semester to semester. Enrollment limited to 15 freshmen.

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 in the crucial second year. The topics vary from department to department and semester to semester. Enrollment limited to 15 sophomores. (F,SP)

90. Freshman Seminar. (3) Three hours of seminar per week. Prerequisites: Consent of instructor. Topics, experimental in nature, will vary from year to year. Staff

98. Directed Group Study. (1-4) Course may be repeated for credit. Enrollment is restricted; see the instructor of record for details. Three hours of lecture per week. Staff

Upper Division Courses

100A. Economic Analysis—Micro. (4) Students will receive no credit for 100A after taking 1. Three hours of lecture and two hours of discussion per week. Prerequisites: 1 or 2 or C3, or Environmental Economics and Policy 1, and Mathematics 1A or Mathematics 16A. A study of the factors which determine national income, employment, and price levels, with attention to the effects of monetary and fiscal policy. (F,SP) Staff

100B. Economic Analysis—Macro. (4) Students will receive no credit for 100B after taking 101B. Three hours of lecture and two hours of discussion per week. Prerequisites: 1 or 2 or C3, or Environmental Economics and Policy 1, and Mathematics 1A or Mathematics 16A. A study of the theories of resource allocation and price determination with emphasis on microeconomic principles. (F,SP) Staff

101A. Economic Theory—Micro. (4) Students will not receive credit for 101A after taking 101B. Three hours of lecture and two hours of discussion per week. Prerequisites: Mathematics 1A or equivalent. Theory of resource allocation and price determination with an emphasis on microeconomic principles. (F,SP) Staff

101B. Economic Theory—Macro. (4) Students will not receive credit for 101B after taking 100B. Three hours of lecture and two hours of discussion per week. Prerequisites: 100A or 100B, or Environmental Economics and Policy 1, and Mathematics 1A or equivalent. Theory of resource allocation and price determination with an emphasis on macroeconomic principles. (F,SP) Staff

C102. Natural Resource Economics. (3) Three hours of lecture and one hour of discussion per week. Prerequisites: Mathematics 53 and 54. Formerly 103. Selected topics illustrating the application of mathematics to economics. This course is intended for upper-division 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 Mathematics C102. (F,SP) Staff

C103. Introduction to Mathematical Economics. (3) Three hours of lecture per week. Prerequisites: Mathematics 53 and 54. Formerly 103. Selected topics illustrating the application of mathematics to economics. This course is intended for upper-division 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 Mathematics C103. (F,SP) 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 special emphasis on game-theoretic models and the theories of major economists from Adam Smith to Keynes.

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.

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-theoretic models of behavior, and a discussion of the ways in which 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 incorporated into economics. The implications of these new assumptions for theoretical and empirical economics will be explored. (F,SP) Staff

113. American Economic History. (4) Three hours of lecture and one hour of discussion per week. Prerequisites: 100A-100B or 101A-101B. The economic and policy analysis of government expenditures, taxes, and intergovernmental fiscal relations. (F,SP) Staff

114. American Economic History Seminar. (4) Three hours of seminar per week. Prerequisites: 113 and consent of instructor. Seminar paper is required.

115. The World Economy in the Twentieth Century. (4) Three hours of lecture and one hour of discussion per week. Prerequisites: 1 or 2. A survey of the world economic system with particular reference to world-wide trading relationships. This course is equivalent to History 160; students will not receive credit for both courses. (F,SP) Staff

119. Psychology and Economics. (3) Three hours of lecture 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. Students will learn how 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 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. Determinants of market structure, 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

125. Economics of the Environment. (4) Three hours of lecture per week. Prerequisites: 123 or consent of instructor. This course presents psychological and experimental economics research demonstrating departures from perfect rationality, self-interest, and other classical assumptions. Students will learn how 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 incorporated into economics. The implications of these new assumptions for theoretical and empirical economics will be explored. (F,SP) Staff

126. Industrial Organization: Theory and Evidence. (3) Three hours of lecture per week. Prerequisites: 101A or consent of instructor. Structure, conduct, and performance of industrial collectives in the U.S.; monopoly, oligopoly, and competition. Emphasis is on use of microeconomic theory and game theory to explain workings of markets, with use of mathematics as applied. Covers monopoly, oligopoly, and competition but with more use of economic theory. (F,SP) Staff

131. Public Sector Microeconomics. (4) Three hours of lecture and one hour of discussion per week. Prerequisites: 100A-100B or 101A-101B. The economic and policy analysis of government expenditures, taxes, and intergovernmental fiscal relations. (F,SP) Staff

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B prefix=language course for business majors C prefix=cross-listed course AC suffix=course satisfies R&C requirement *Professor of the Graduate School H prefix=honors course R prefix=course satisfies R&C requirement |Recipient of Distinguished Teaching Award
132. Seminar in Public Sector Economics. (4) Three hours of seminar per week. Prerequisites: 131 and consent of instructor. Enrollment will be limited. A seminar paper is required. Staff

136. Financial Economics. (3) Three hours of lecture and one hour of discussion per week. Prerequisites: 100A or 101A-101B 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: 102 or 156 and consent of instructor. Enrollment will be limited. A seminar paper is required. Staff

140. Econometric Theory and Statistics. (4) Students will not receive credit for 140 after taking 141. Three hours of lecture and one- or two-hour hours of discussion per week. Prerequisites: 101A-101B or 100-A-100B and Statistics 20, 21, or 131A. In this course, we do not use formal mathematical arguments. Instead, students will learn principles by example and graphical description. (F,SP) Staff

141. Economic Statistics and Econometrics. (4) Students will not receive credit for 141 after taking 140. Three hours of lecture and one- or two-hour hours of discussion per week. Prerequisites: 100A-100B or 101A-101B, and one semester of statistics. Analyzes problems of observation, estimation, and hypothesis testing in economics through the study of the theory and application of linear regression model, critical examination of selected examples of empirical economic research, and exercises in applied econometrics. (F,SP) Staff

C142. Applied Econometrics and Public Policy. (4) Three hours of lecture and one hour of discussion/laboratory per week. Prerequisites: 140 or 141 or consent of instructor. Designed for students majoring in economics. Staff

151. Labor Economics. (3) Three hours of lecture per week. Prerequisites: 100A-100B or 101A-101B or consent of instructor. This course will analyze the economic theory of labor markets, institutions, and performance in the U.S., and in at least one European country (usually Germany). Institutions examined include union-trades, legal regulations, and social security. (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. Course focuses on theoretical and empirical analysis of wage and employment determination in the labor market. In addition, 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 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

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 include trends in health care expenditures, health services, policy and political 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 radical privatization, liberalization, and the macroeconomic environment. Privatization policies and enterprise restructuring. Legal reform, institutional change, and variation in economic performance across countries. Foreign trade and enlargement of the European Union to transition countries. The Washington consensus, transition, and the institutions of capitalism. (F,SP) Staff

162. Economics of Transition and Development: China. (3) Three hours of lecture per week. Prerequisites: 100A-100B or 101A-101B. The Chinese economy, its institutions, reform and transition to the market, and development. (F,SP) Staff

163. Special Topics in Economic Systems. (1.5) One and one-half hour of lecture per week. Prerequisites: 1 or 2. Recommended: 161 or 162. As assigned.Staff

C171. Economic Development. (4) Three hours of lecture and one hour of discussion per week. Prerequisites: 100, Economics 100A or 101A. Problems of underdevelopment and poverty, policy issues, and development strategy. Also listed as Environmental Economics and Policy C151. (F)

172. Case Studies in Economic Development. (4) Three hours of lecture and one hour of discussion per week. Prerequisites: 1. A detailed study of the problems of development in a selected geographical area in Asia or Africa or Latin America. (F,SP) Staff

173. Economic Development Seminar. (4) Three hours of lecture 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, ad- dressing the following kinds of questions: What are the economic consequences of immigration to the U.S.? Will industrial nations be able to afford the health and pension costs of the aging populations? How has the aging in baby boomers affected its descriptions? What is life expectancy, and the environment? What has been the impact of World War II? How do the conditions differ from the world of 1945? Will health care costs increase? How have economic development and economic conditions affected the U.S. economy? Will economic growth continue? What will be the impact of immigration? (F,SP) 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 determinants of the trade and current accounts, and income from fixed and floating exchange rates, money and prices in open economies, the internationalization of financial markets and its implications, international monetary systems, balance of payments, 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 staff will be announced before enrollment. Enrollment will be limited. A seminar paper is required. Staff

H195A. 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. Staff

H195B. 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 instructor). Under the supervision of a faculty member. Applications and details through the departmental undergraduate office. 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 major, approval of Department Chair. 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 major, approval of Department Chair. Written proposal must be approved by Department Chair. Enrollment is restricted. (F,SP) Staff

Graduate Courses

201A-201B. Economic Theory. (4,4) Three hours of lecture and two hours of discussion per week. Prerequisites: 100A-100B or 101A-101B. Economics 104, Mathematics 53 and 54 or equivalent. Basic preparation for the Ph.D. program including: theory of the firm and the consumer, general equilibrium, capital theory, and welfare economics. 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. Basic preparation for the Ph.D. program including: aggregate theory, national accounting and index problems, survey of major short-term models, implications of various expectations hypotheses, wage price determination, the role of money and financial assets, theories of consumption and investment, disequilibrium theory, dynamic systems, and international considerations. 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. (4) Three hours of lecture and two hours of discussion per week. Prerequisites: 100A-100B or 101A-101B. Staff

206. Mechanism Design and Agency Theory. (3) Two hours of lecture per week. Prerequisites: 208 and 209A or consent of instructor. Formerly 209B. This course will study the optimal design of 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-207B. Mathematical Economics. (3,3) Two hours of lecture per week. Two hours of discussion per week including class time and preparation. Prerequisites: Math 104 and 110 and 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. 

208. Microeconomic Theory Seminar. (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. (Two hours of lecture per week. Prerequisites: Consent of instructor. This course will study both pure game theory and its application to such problems as oligopoly pricing, non-cooperative bargaining, political serials and auction. 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. (Two hours of lecture per week. Must be taken in sequence with basic non-cooperative theory, 209A. Prerequisites: 209A or consent of instructor. The course will cover basic topics not covered in 209A; will provide a more thorough treatment of topics covered in 209A; will cover a selection of advanced topics. Staff)

210A. Introduction to Economic History. (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. (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. (Two hours of lecture per week. Prerequisites: 210A. A survey of some central themes in American economic history. Staff)

211. Seminar in Economic History. (Course may be repeated for credit. Two hours of seminar per week. Prerequisites: Consent of instructor. Staff)


215C. Selected Topics in Political Economy. (Two hours of lecture per week. Special topics, varying from year to year. Staff)

216. Seminar in Psychology and Economics. (Three hours of lecture per week. A graduate seminar in the field of behavioral economics. (FSP) Della Vigna, Koszegi, Rabin)

219A. Foundations of Psychology and Economics. (Three hours of lecture per week. Prerequisites: 210A-210B or consent of instructor. This course provides an introduction to psychology and economics with emphasis on the fundamentals and empirical research. (FSP) Staff)

219B. Applications of Psychology and Economics. (Three hours of lecture per week. Prerequisites: 219A-219B 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. (FSP) Staff)

219D. Experimental Economics. (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. (FSP) Staff)

220A. Industrial Organization. (Two hours of lecture per week. Prerequisites: 219A. 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. (Two hours of lecture per week. Prerequisites: 220A. Continuation of 220A. The course will cover the consequences of regulation for economic performance. Staff)

220C. Special Topics in Industrial Organization. (Two hours of lecture per week. Prerequisites: See course announcement. See course announcement for current topics. Staff)

221. Seminar in Industrial Organization: Regulation and Public Enterprise. (Course may be repeated for credit. Two hours of seminar per week. Prerequisites: Consent of instructor. Staff)

222. Economics of Innovation. (Course may be repeated for credit. Two hours of seminar per week. Prerequisites: 201A, 201B and 202A-202B or consent of instructor. 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 bibliographic data for the analysis of technological change and legal and economic issues of intellectual property rights; science and technology policy; and the contributions of innvations and diffusion to economic growth. Methods of analysis are both theoretical and empirical, econometric and case study. (FSP) Staff)

224. Economics of Institutions. (Two hours of lecture per week. This course develops the proposition that institutions have pervasive ramifications for understanding economic organization. A comparative institutional approach is employed whereby the transac tion is made the basic unit of analysis and alternative modes of organization are assessed with respect to their comparative contracting properties. Staff)

225. Workshop in Institutional Analysis. (Course may be repeated for credit. Two hours of seminar per week. Must be taken on a satisfactory/unsatisfactory basis. Prerequisites: Doctoral standing or consent of instructor. This seminar features current research faculty, from UCB and elsewhere, and advanced graduate students who are investigating the efficacy of economic and noneconomic forms of organization. An interdisciplinary perspective—combining aspects of law, economics—is maintained. Markets, hierarchies, hybrids, boards, and the supporting institutions of law and politics are under scrutiny. The aspiration is to progressively build toward a new science of organization. Also listed as Interdepartmental Studies 270. Staff)

230A. Public Sector Microeconomics. (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 Sector Microeconomics. (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 intervention. The primary emphasis will be on 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. Instead, relevant econometric techniques (e.g., discrete choice, duration analysis) will be discussed in the context of the empirical literature. (FSP) Staff)

230C. Public Sector Microeconomics. (Three hours of lecture per week. The economic and policy analysis of government expenditures, taxes, and intergovernmental fiscal relations. Also listed as Public Policy C274. (FSP) Quigley)

231. Seminar in Public Sector Economics. (Course may be repeated for credit. Two hours of seminar per week. Prerequisites: Consent of instructor. Staff)

236A-236B. Aggregate Economics. (3,3) Two hours of lecture per week. Prerequisites: For 236A: 201A-201B and 202A-202B. For 236B: 236A. Macroeconomic models: the theory and practice of aggregate econometrics; rational expectations models; finance theory integrated with macro. Staff

236C. Capital and Economic Growth. (Two hours of lecture per week. Formerly 220C. An examination of the determinants of time and capital in economies. Analysis of individual choice and the theories of production and distribution. The course will discuss the nature of capital and consider the role of capital accumulation in modern theories of economic growth and planning. (FSP) Staff)

237. Seminar in Advanced Macroeconomics and Money. (Course may be repeated for credit. Two hours of seminar per week. Prerequisites: Consent of instructor. Staff)

240A. Introductory Statistics and Econometrics. (4) Three hours of lecture and one-half hour of laboratory per week. Prerequisites: 240A or equivalent. Staff)

240B. Introduction to Statistics and Econometrics. (4) Three hours of lecture and one-half hour of laboratory per week. Prerequisites: 240A or equivalent. Econometric models and applications, including nonlinear regression, simultaneous equations, limited dependent variables, time series analysis, and nonparametric methods. (F) Staff)

241A. Econometrics. (4) Three hours of lecture per week. Prerequisites: Statistics 200A-200B or equivalent and a course in linear algebra. Recommended: Math 112. Intended for students specializing in econometrics and others with strong mathematical backgrounds. Linear and nonlinear statistical models and their applications in economics. Special problems in applying econometric data from non-controlled experiments. (SP) Staff)

241B. Econometrics. (4) Three hours of lecture per week. Prerequisites: 241A. Simultaneous equations and time-series models. Staff)

242. Seminar in Econometrics. (Course may be repeated for credit. Two hours of seminar per week. Prerequisites: Consent of instructor. Staff)

243. Special Topics in Economic Theory. (Course may be repeated for credit. Two hours of lecture per week. Prerequisites: 243A-243B. See department course description each semester. Staff)

244. Applied Econometrics. (3) Three hours of lecture per week. Prerequisites: 240A. Methods of applied econometrics, with emphasis on alternative modelling 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. Consent 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. (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)

B prefix=language course for business majors
C prefix=cross-listed course
AC suffix=course satisfies American cultures requirement
*Professor of the Graduate School
\textsuperscript{p}Recipient of Distinguished Teaching Award
280A. International Economics. (3) Two hours of lecture per week. Economic note: Theory of international economics, trade policy. Staff

280B. International Economics. (3) Two hours of lecture per week. Prerequisites: 280A. 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 countries and 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 and finance. Topics include trade elasticities, the determination of the trade balance and income under fixed and floating exchange rates, purchasing power parity, devaluation in small open economies, quantification of the degree of capital mobility, implications for the effectiveness of monetary and fiscal policy, intertemporal independence and market anomalies, exchange rate determination. (SP) Staff

281. Seminar in International Trade and Finance. (3) Course may be repeated for credit. Two hours of seminar per week. Staff

287. Special Topics in Health Economics. (2) Two hours of seminar per week. Formerly 287. This seminar features current research of faculty, from UC Berkeley and elsewhere, and advanced doctoral students who are investigating recent theories and empirical work in health economics. Participating departments include economics and the graduate programs in Health Services and Policy Analysis. A survey of the literature will be completed and students will be required to write an original paper for the course. (F) Staff

291. Departmental Seminar. (1) One and one-half hours of seminar every other week. Must be taken on a satisfactory/unsatisfactory basis. Prerequisites: 201B, 202B. A general interest seminar featuring speakers and topics of broad interest whose work will be important for all areas of economics. (F,SP) Staff

295. Survey of Research in Economics. (1) Two hours of seminar per week. Must be taken on a passed/not passed basis. Presentations by departmental faculty of new research directions in different subfields of economics. Staff

296. Special Topics in Economics. (3) Two hours of lecture per week. Prerequisites: Consent of instructor. Staff

297. Analysis of Economic Development and Planning. (3) Two hours of lecture per week. Prerequisites: 201A-201B, 202A-202B, 201C, 202C. Basic macro policy planning with investment project analysis. Staff

298. Directed Group Study for Graduates. (1-4) Course may be repeated for credit. Two hours of seminar per week. Staff

299. Supervised Independent Study and Research. (1-12) Course may be repeated for credit. Must be taken on a satisfactory/unsatisfactory basis. Open to candidates for the Ph.D. who have passed the qualifying examination and who are engaged in research for the thesis, and in special cases with consent of the instructor in charge, to graduate students who desire to do special work in a particular field. (F,SP) Staff

602. Individual Study for Doctoral Students. (1-8) Course may be repeated for credit. Does not satisfy unit or residence requirements for doctoral degree. Must be taken on a satisfactory/unsatisfactory basis. Individual study in consultation with the major field advisor, intended to provide an opportunity for qualified graduate students to prepare themselves for the various examinations required of candidates for the Ph.D. A student will be permitted to accumulate a maximum of 16 units of 602. Staff

Professional Courses

301. SGI Practicum. (2) Two hours of seminar per week. Course may be repeated for credit. Two hours of seminar per week. Staff

Interdepartmental Studies Courses

Graduate Courses

IDS 270. Workshop in Institutional Analysis. (2) Course may be repeated for credit. Two hours of seminar per week. Must be taken on a satisfactory/unsatisfactory basis. Prerequisites: Appointment as graduate student instructor in department, consent of graduate advisor. Course credit for experience gained in academic teaching through employment as a graduate student instructor. Staff

Economics

(Graduate School of Education)

Office: 1501 Tolman Hall, gse_info@berkeley.edu, (510) 642-3729, http://www-gse.berkeley.edu

Dean: P. David Pearson, Ph.D.

Professors

Paul R. Ammon, Ph.D. Cornell University. Education and development psychology

Andrea A. diSessa, Ph.D. Massachusetts Institute of Technology. Physics and computer cognition

Sarah Warshaw Freedman, Ph.D. Stanford University. Teaching and learning written language

Bruce Fuller, Ph.D. Stanford University. Impact of public policy on schools, families, and classrooms

Bernard A. Gifford, Ph.D. University of Rochester. Policy analysis, technological education

W. Norton Grubb, Ph.D. Harvard University. Education policy, labor markets

Gyöngyuli Hull, Ph.D. University of Pittsburgh. Written language, technology and education, adult literacy

John G. Hurst, Ph.D. Ohio State University. Democratic and environmental education; phenomenological methods

Claire Kramsch, A.Gregation d’allemand. University of Paris-Sorbonne. Sociocultural aspects of foreign language acquisition

*Anita M. Lambert, Ph.D. University of Southern California. Measurement of adaptive functioning, adolescent and adult outcome for ADHD children

Marcia C. Linn, Ph.D. Stanford University. Cognitive processes; science, computer instruction

Judith A. S. Little, Ph.D. University of Colorado. Teachers’ work lives and careers; social policy and school reform; qualitative methods

P. David Pearson, Ph.D. University of Minnesota. Early reading and literacy assessment

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 learning in children: Development and cognitive development

Alan H. Schoenfeld, Ph.D. Stanford University. Problem solving, metacognition, mathematical cognition

Harley Shaiken, B.A. Wayne State University. Skill formation, training, work organization and global production

David E. Smith, Ph.D. Massachusetts Institute of Technology. Education and work, resource allocation in schools

Eliot Turkel, Ph.D. Yale University. Social and cognitive development

Barbara White, Ph.D. Massachusetts Institute of Technology. Science education: cognition, computers, learning

Mark Wilson, Ph.D. University of Chicago. Psychometrics, educational statistics


Associate Professors

Anne E. Cunningham, Ph.D. University of Michigan. Cognitive consequences of literacy, reading process and disabilities

Jabar Mahri, Ph.D. University of Illinois at Chicago. Literacy development in out-of-school settings

Kathleen E. Metz, Ed.D. University of Massachusetts. Development of scientific cognition in young children

Heinz Miethe, Ph.D. Stanford University. Educational policy, school improvement, accountability systems, curricular studies

Daniel H. Perstein, Ph.D. Stanford University. History of education, urban school reform

Michael Pinney, Ph.D. University of Pittsburgh. Reasoning, learning, cognitive science

Herbert A. Simons, O.D. Ed.D. Harvard University. Reading acquisition, reading problems

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 adolescents, African American, Caribbean and gifted adolescents

Donald A. Hansen, Ph.D. (Emeritus)
Graduate Program

The Graduate School of Education is an exciting place—a dynamic community of scholars dedicated to understanding the processes of development, learning, and teaching in the contexts in which they take place. The faculty and students in the school are grounded equally in the theory and practice, and start from the premise that these two enterprises resonate together.

We are in the process of rethinking the role of a graduate school of education in the world of the 21st century. In particular, we are re-examining the ways in which we can serve as a bridge between the knowledge of the academic disciplines represented on our campus and the wisdom of teaching represented by our colleagues in grades K-12 programs and will be the better for the connections we can establish.

If you want to engage in conversations about the big ideas that you are prepared to ask how those ideas can make life better for students and families and teachers, then Berkeley's Graduate School of Education is the right place for you to pursue your studies.

The school offers programs that lead to advanced degrees in education, the M.A., the Ph.D., and the Ed.D. In addition, the school grants credentials to professionals who plan to work in the schools as teachers, principals, district and county administrators, and other leaders.

The Graduate School of Education includes three academic groups: 1) Cognition and Development; 2) Language and Literacy, Society and Culture; and 3) Policy, Organization, Measurement, and Evaluation.

• a breadth and depth of methodological, measurement, and evaluation expertise adequate both to mount policy-oriented research and to inform sound leadership and decision-making.

Graduate Minor

The School of Education offers a minor in education for undergraduate students enrolled at Berkeley. The minor in education provides an opportunity to examine systematically an institution that occupies a unique position in society and profoundly influences virtually everyone. This program is designed to enable students to develop a critical understanding of the relationship of education to the development of societies and individuals. Its focus is on the potential as well as the reality of diverse forms of education.

The minor offers an opportunity for intellectual inquiry to broaden and complement students’ work in their major fields of study. In the process, students will encounter the wide array of professional possibilities in the field of education, enabling those considering a career in the field to make an informed choice.

Lower Division Courses

C1. Introduction to Cognitive Science. (4) Three hours of lecture and two hours of laboratory per week. Formerly T. 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 the nature of knowledge, thinking, remembering, vision, imagery, language, and consciousness. Sections will demonstrate some of the major methodologies. Also listed as Cognitive Science C1. (F,SP)

24. Berkeley Freshman Seminars. (1) Course may be repeated for credit up to a maximum of three hours of seminar per week. Prerequisites: Priority given to freshmen. The Berkeley Seminar Program has been designed to provide new students with the opportunity to experience an intellectual topic with a faculty member in a small-seminar setting. Enrollment limited to 15 freshmen. Staff

39. Freshman/Sophomore Seminar. Course may be repeated for credit as topics vary. Three hours of seminar per week. 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. Staff

50. Learning to Comprehend Written Texts. (4) Four hours of lecture/discussion per week. This course provides students with an understanding of the processes involved in reading and searching out information, an ability that plays a central role in school success at all levels. The topics include models of skilled reading, metacognition, comprehension of main idea, annotating, summarizing, graphic organizers, speed reading, vocabulary learning, text structure and text difficulty, negotiating academic discourse, the role of interest and motivation in reading, and reading problems resulting from multiple cultures. The major focus of the course will be on college-level reading. Students will have the opportunity to apply some of the processes to their own reading. Simons, Staff

52. Understanding Language in Society. (3) Three hours of lecture/discussion per week. This course explores how language is influenced by social factors. The topics include dialects and standard English, slang, and the influence of gender, identity, and bilingualism on language use, highlighting the divergent ways in which people use language to communicate with one another. A secondary objective is to teach strategies that are proven effective for successful and efficient reading, writing, learning, and studying. These strategies will be applied to the content of this class and be useful in students’ other classes. (F,SP) Simons

75. Introduction to Sport in Higher Education. (3) Three hours of lecture/discussion per week. This course addresses both the socio-cultural context of sport in higher education as well as the individual’s experience of sport within this particular context. The course will examine the evolution of the athlete athlete in the 19th century and subsequent commercialization of college sports within the 20th century. Particular areas of focus will be the NCAA by the late 1990s and the portrayal of the American “student-athlete,” as well as identities of race, class, gender, and sexual orientation as they relate to sport in higher education. (F,SP) Simons, Van Rheenen

**Prefix=cross-listed course satisfies R& requirement**

*Professor of the Graduate School*

†Recipient of Distinguished Teaching Award
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 for one semester. 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 across the campus. Sophomore seminars offer opportunity for close, reciprocal 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

Upper Division Courses

100. Educational Psychology for Teachers. (3) Three hours of lecture per week. Prerequisites: Admission to teaching credential program. Lectures on topics of special interest: teaching children and adolescent development, the teaching-learning process, and classroom evaluation. Application of these concepts to the school setting and 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. 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. Part of the course work 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 per week. Prerequisites: Admission to a teaching credential program. Lectures and workshops on curriculum, instructional strategies,志愿 preparation in an after-school program. Incorporates competencies for Reading Instruction Competency Assessment (RICA) and for teaching children whose primary language is not English. Staff

158. Foundations for Teaching Reading in Grades K-8. (2-3) Two hours of lecture per week. Prerequisites: Admission to a teaching credential program (summer session excluded). Formerly 258A/258B. Introduction to reading and writing in elementary school settings. Basic literacy skills, instructional methods, and approaches, assessment procedures, and reading and writing theories. Cunningham

160. 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 strategies, and methods for teaching social studies in elementary schools. Staff

169. Multiculturalism and Its Discontents. (3) Three hours of lecture per week. Prerequisites: (F,SP). What difference does it make? Does attentiveness to social and cultural diversity foster democratic schooling? This course examines debates about how schools do and should respond to social and cultural differences. We consider issues of diversity in Americans’ daily lives and culture and how attentiveness to difference might foster or constrain Americans’ political activity. Finally, we evaluate the compatibility of multiculturalism with efforts to reform American education. Peristein

180. Logic of Inquiry. (3) Three hours of lecture per week. An analysis of the logical and epistemological foundations 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

186AC. The Southern Border. (4) Four hours of lecture/discussion per week. Prerequisites: Upper division standing or consent of instructor. Staff

186B. The Southern Border. (4) Four hours of lecture/discussion per week. Prerequisites: Upper division standing. Staff

190A. Learning from Text in Anthropology. (1-2) 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

90B. Learning from Text in Asian American 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 Asian American Studies. (F,SP) Staff

90C. Learning from Text in Chicano 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 Chicano Studies. (F,SP) Staff

90D. Learning from Text in African American 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 African American Studies. (F,SP) 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

90G. Learning from Text in History. (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 History. (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. 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 standing. Supervised 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
187. Cooperatives and Community Development: Education for Ownership. (3) Three hours of lecture per week. A survey of cooperative development strategies to strengthen communities, create economic opportunities, and serve underserved services. Examines the fundamental role of education in creating 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. Prerequisite: Consent of instructor. A study of critical and collective thinking. Hurst

190. Current Issues in Education. (4) Three hours of lecture and one and one-half hours of discussion per week. Throughout the year and discussion, students will examine current issues in education. Coursework will begin with a critical history 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 administration, 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 complex causes. Group members will work in small work 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. (3) 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 the workplace as an ongoing laboratory that involves learning, 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. (5) 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. (5) Five one 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 vary from semester to semester and tend to be sectional. Hurst

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 lecture and one hour of discussion 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 practical strategies for helping elementary 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 schools and school-related activities. (F.SP) Staff

198. Direct Group Study. (1-3) Course may be repeated for credit as tutor availability permits. Consent of instructor. Prerequisites: Direct Group Study. Staff

199. Supervised Independent Study and Research for Undergraduates. (1-4) Course may be repeated for credit. Five and one-half hours of lecture and six hours of fieldwork per week.Prerequisites: Consent of instructor. (F.SP) Staff

Graduate Courses


200B. Social Development. (3) Three hours of lecture per week. Prerequisites: Consent of instructor. An examination of research and social development from childhood to early adulthood. Review of different theoretical orientations to social cognition, morality, and interpersonal relationships, characteristics, behavior of children in regular and special classes. Staff

200C. Culture and Cognitive Development. (3) Three hours of lecture/discussion per week. Prerequisites: 200A and consent of instructor. This course explores advanced topics in Piaget's and Vygotsky's frameworks for the development of cognitive 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

201A. Psychology of Reading. (3) Three hours of lecture per week. Comparison and analysis of the psychological and linguistic evidence underlying whole language and 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) 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) 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. Turiel

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. Lambert

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 and memory, metacognition, emergent literacy, reading, writing, mathematics, science, computer literacy, motivation, self-regulated learning, and classroom organization. Carbone

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, an examination of norms and validity, an examination of the WISC-R, Stanford-Binet, and other issues pertaining to intelligence testing. Current controversial issues in testing, including issues pertaining to test bias and legal aspects of testing. Staff

207C. Diagnosis of Human Handicaps. (4) Three hours of lecture and six hours of fieldwork per week. Prerequisites: Consent of instructor. 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 assessment, rating tests, least restrictive environments, alternative programs, parent communication, interpersonal relationships, characteristics, behavior of exceptional pupils are covered in studies of individual exceptional children in regular classes. Stern

211A-211B. 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. Introduction to theories of human development and the impact they have on the preschool and elementary school education. Topics include cognitive development, moral and social development, language acquisition, psycho-social perspectives on social-emotional development, and a development of classroom organization. Also supervised child study, individual and small group tutoring, and field experiences. Ammon, Gearhart, Staff

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 Mult-
tical Urban Secondary English Teaching Credential Program. This graduate seminar relates the goals of secondary English teaching to three major themes in the study of adolescent development: rationality, morality, and 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 adolescents’ “self-theories” and motivational consequences. Students write papers on related topics for a class anthology. (F,S,P) 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 school psychologist. 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. Staff

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 classroom settings. 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. (3) Course may be repeated for credit. Three and one-half hours of seminar per week. Must be taken on a satisfactory/unsatisfactory basis. Prerequisites: Graduate standing and consent of instructor. Reports and discussion of original research in the area of human development and education. Not all participants are required to report in any given semester, but all are expected to attend and to enter into the discussions. Strongly recommended for all students in the graduate program in human development and education. 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, the nature of parental 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 operates on the relationship between families and schools. Course requirements: class participation, three short papers, reaction note- book. Holloway

222A. Programming and Problem Solving. (3) Three hours of lecture per week. This course will analyze how special needs solve programming problems, examine recent investigations of programming and relate these investigations to recent research on learning and instruction. Using these insights, current problems will be examined. Other topics include: programming environments such as MacPascal instruction, programming text books, and student behavior when solving programming problems. Linn

223B. Special Problems in Mathematics, Science and Technology Education. (2-6) Course may be repeated for credit. Consent of instructor required. Two to six hours of lecture/discussion per week. Study of special problems in education related to mathematics, science and technology. Sections may vary from semester to semester. Staff

224A. Mathematical Thinking and Problem Solving. (3) Three hours of lecture per week. This course explores contemporary research on mathematical cognition, with a particular emphasis on “higher order thinking skills” and mathematical problem solving. We discuss various frameworks for characterizing mathematical behavior and various methodologies for examining it. As an “action oriented” course in the EMST curriculum this is a major laboratory course project. In their project, students engage in research incorporating the main ideas studied in the course. Schoenfeld

224C. Gender, Mathematics and Science. (3) Three hours of seminar per week. The course explores com- monly asked questions in mathematics, science, and technol- ogy. We will discuss whether these are appropriate and examine evidence related to the questions. This course will also consider whether policies and curricula in mathematics, science, and technology should be 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 understanding and operating computer systems (i.e. 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. J. diSessa

225D. Computer System Design Project Laboratory. (1) Three hours of laboratory per week. Prereq- uisites: Consent of instructor. The course 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 is software implementation and design. 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. J. diSessa

226. Constructive Epistemology. (3) Three hours of lecture per week. Many approaches to education take the knowledge to be taught as fixed, and the manipulable 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, based on principles of learn- ability, etc., rather than just “effective methods.” This tactic is valuable in view of the radical changes infor- mation technology may have on what we need to teach and what general areas are teachable. J. diSessa

227. Metacognition. (3) Three hours of lecture per week. Metacognition involves adults’ awareness of metacognition, effective control and self-regulation in problem solving; belief systems and naive epistemologies will be surveyed from the following points of view: metacognition’s mental evidence that humans have such knowledge, where such knowl- edge is attained, the extent to which it is learnable and what should be taught, based on principles of learn- ability, etc., rather than just “effective methods.” This tactic is valuable in view of the radical changes infor- mation technology may have on what we need to teach and what general areas are teachable. J. diSessa

228A. Qualitative Methodology. (3) Three hours of lecture/discussion per week. The course will be or- ganized by principal activities: group readings, book re- ports, expert and novice methodology presentations, 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 ar- eas 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

229A. Proseminar: Problem Solving and Under- standing. (3) Three hours of lecture per week. Prereq- uisites: Consent of instructor. Students will exam- ine problem solving in children and adults, from a predominantly cognitive science perspective, beginning with an examination of thinking involved in diverse problem types. Students will then analyze the literature concerning cognitive issues that transcend problem types, including representation, “understanding,” ac-

cess and availability of knowledge, access to one’s own cognitive processing, categorization, the archi- tecture of knowledge, and the control of cognition. Also listed as Psychology C223.

229F. Conceptual Change. (3) Three hours of lecture per week. “Conceptual change” concerns broad and deep changes in a person’s knowledge about a domain. This opposes it, for example, to the learning of facts and skill acquisition. The course emphasizes re- cognizing cognitive science-oriented approaches to defining “broad changes” in domains such as science or tech- nology. It draws on diverse other approaches including developmental psychology; analogies to the history of science; “misconceptions”; computational and epis- temological approaches. Staff

230. Literacies: Old and New. (3) Three hours of lecture/discussion per week. The emergence of electronic media with radically different properties than text en- courages a reflection on the essence of literacy. The course balances readings on traditional literacy and on a view of new, electronic literacies. Comparative study will allow addressing questions such as these: What value does literacy convey to individuals and cultures? How do the properties of the material basis of literacy transition into digital ones, and how? Are new literacies really possible? J. diSessa

231. Introduction to Secondary School. (2) Course may be repeated for credit. Two hours of lecture per week. Prerequisites: Admission to a credential pro- gram in literacy. Seminars, lectures, workshops to meet re- quirements for the single subject credential. Subject areas include educational psychology; instructional strategies; learning processes; and secondary school mathematics, science, and technology. Staff

232. Problem Solving and Understanding in the El- ementary 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 covers cognitive science analyses of problem solving and un- derstanding; meta-cognitive and epistemological per- spectives on problem solving; classroom-based subject-matter curricular analyses in mathematics, liter- acy, history, and science; and social-cultural analyses of school practices. (F) Metz

235. Elementary Teaching in Mathematics and Sci- ence. (3) Three hours of lecture per week. Prerequi- sites: Admission to Developmental Teacher Education Program or consent of instructor. Curriculum, instruc- tional theory, and methods for teaching mathematics and science in elementary schools. Staff

240A. Language Study for Educators. (3) Three hours of lecture/discussion per week. This course will introduce all students to the nature of human language, and study 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 re- quired for all Ed.S. students and recommended as an introductory course to all students who have had no formal coursework in linguistics. Fillmore, 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 ac- quisition and literacy learning. Connections will be made between research, theory, and practice. Hull, Mahiri

240C. Issues in First and Second Language Ac- quisition. (3) Three hours of seminar per week. Prere- quisite: Course in linguistics or language acquisition. Formerly 254C. This course deals with issues related to language learning and development in school-age children. How do they acquire the language skills needed for literacy and academic development? How do children make the transition from home to school language use? How do children learn a second lan- guage? What happens when learning a second lan- guage results in the loss of the first language? We will
consider the educational, social and cognitive implications of these issues. Fillmore

240D. Foundations of Curriculum Theory in the United States: A Survey. (3) Three hours of lecture per week. This course explores the development of curriculum theory and the role of the curriculum specialist in the United States since the Progressive Period. Emphasizing a survey of classic texts and key figures, the course covers the development of three schools of thought: social efficiency approaches, child-centered constructive recreationist approaches. It concludes with a study of curriculum theory since the Reconceptualists. Eidman-Aadahl

241A. Issues in Language Arts Instruction. (3) Three hours of seminar per week. Formerly 244B. Working within a developmental and sociolinguistic framework, students examine issues related to the assessment and fostering of oral and written language with an emphasis on the elementary and middle school years. Among the topics to be covered are the role of talk in learning, the use of the oral language, emergent literacy, and writing development. Staff

241B. Language Socialization. (3) Three hours of seminar per week. Throughout the lifespan we are socialized through language to become competent participants and members of various groups and communities within local and global learning institutions. For the past 20 years, this theory and method for analyzing human development has made important contributions to our understanding of how we learn to become competent members of society, how we learn the rules of the game, and how we are socialized into language. This course will provide opportunities to overview the theoretical cornerstones of language socialization as a field of study, as well as review current studies and chart future research trajectories. Course participants are expected to collect and analyze audio/video data from an educational and other learning context where language socialization might be taking place. (F) Baquedano-López

242A. Issues in Reading Instruction. (3) Three hours of lecture/discussion per week. Formerly 241. Course content will focus on the implications of reading theory and research for curricular decisions in teaching reading and writing. An emphasis on a holistic and sequential approach to reading will be the focus of this course. Critical analysis of instructional programs will be followed by curriculum planning for the school site and district level. Staff

243A. Issues in Secondary and Post-Secondary Reading. (3) Three hours of lecture per week. Formerly 244D. The focus of this course will be on the theoretical and instructional issues surrounding instruction in reading for secondary and post-secondary learners. The course is designed to provide comprehension of literary, expository, and self-directed learning strategies, the role of writing in the comprehension process, and approaches to curriculum organization. Staff

244B. Methods for Teaching English in the Secondary Schools. (3) Three hours of lecture per week. Prerequisites: Enrollment in CLAD/Secondary Schools credential program. This methods course introduces the teaching of secondary English. It focuses on the functional and classroom management decisions that shape theory and practice. The course models effective approaches to teaching English and introduces issues in constructing a secondary English curriculum. Students gain a practical understanding of developing plans for classroom units of instruction as well as a sense of how to build academic communities of diverse learners, including non-native speakers of English. (F) Friedman, Cziko

244C. Methods for Teaching English in the Secondary Schools. (3) Three hours of lecture per week. Prerequisites: CLAD/Single Subject English Credential Program and 244B. The second semester of the methods course is designed to continue introducing the teaching of English, with a focus on strategies and understandings, and helping students to view a classroom as a unique setting where the aims of fostering or remedial activity are driven. Students conduct small-scale studies in classroom settings. Baquedano-López

250B. Second Language Acquisition: Concepts and Theories. (3) Three hours of seminar 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? Examination 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, affective and cultural variables, 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, psychological and sociolinguistic concepts and theories of discourse and their application to the analysis of spoken and written texts in education. Topics include: coherence and cohesion, deixis, speech acts, genres, systemic functional perspective, and interlanguage. Staff

250D. Language and Identity. (3) Three hours of lecture/discussion per week. Relationship between language and identity practice and the construction of individual and collective identity, and its significance in educational contexts. Topics covered include language as embodied practice, language and subjectivity, pedagogy and symbolic control, language learning as me- diated by the social and the cultural, an exploration of identity, writing and textual identity, authorship and voice, language learning memoirs as acts of identity, the politics of recognition, linguistic human rights. Kramsch

251A. Research on Early Literacy Development. (3) Three hours of seminar per week. Formerly 251. An examination of selected topics in reading research including historical, cognitive, practice and the construction of individual and collective identity, and its significance in educational contexts. Topics covered include language as embodied practice, language and subjectivity, pedagogy and symbolic control, language learning as mediated by the social and the cultural, an exploration of identity, writing and textual identity, authorship and voice, language learning memoirs as acts of identity, the politics of recognition, linguistic human rights. Kramsch

252A. Research in Sociolinguistic Perspective. (3) Course may be repeated for credit. Three hours of seminar per week. Formerly 252. An examination of selected topics in reading research including historical, cognitive, practice and the construction of individual and collective identity, and its significance in educational contexts. Topics covered include language as embodied practice, language and subjectivity, pedagogy and symbolic control, language learning as mediated by the social and the cultural, an exploration of identity, writing and textual identity, authorship and voice, language learning memoirs as acts of identity, the politics of recognition, linguistic human rights. Kramsch

254A. Research in Second Language Acquisition. (3) Course may be repeated for credit. Three hours of seminar per week. Formerly 254A. Examination of selected topics in reading research including historical, cognitive, practice and the construction of individual and collective identity, and its significance in educational contexts. Topics covered include language as embodied practice, language and subjectivity, pedagogy and symbolic control, language learning as mediated by the social and the cultural, an exploration of identity, writing and textual identity, authorship and voice, language learning memoirs as acts of identity, the politics of recognition, linguistic human rights. Kramsch

256A. Issues in the Study of Bilingualism. (3) Three hours of lecture/discussion per week. Formerly 256A. Working within a sociolinguistic framework, students examine selected topics in the study of bilingualism which include the politics of recognition, linguistic human rights. 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 acquisition of second languages by children and adolescents. Focus on cognitive and social variables of the learning process and on the sources of individual differences. Examination of education problems encountered by second language learners. Staff

256B. Research on Technology and Literacy. (2,3) Course may be repeated for credit with consent of instructor. Two hours of lecture and two hours of lab work per week. Formerly 256B. Psycholinguistic theory and research on the acquisition of second languages by learners at secondary and post-secondary institutions. How do...
257. The Student Athlete and Educational Institutions. (3) Three hours of discussion per week. Student athletes face a dilemma. They are expected to be both successful in the classroom as well as on the field of play. The academic and the athletic domains of student-athletes are in constant conflict and the student-athletes face the difficult task of resolving this conflict. This course examines the writing and research on student-athletes from a sociological, psychological, and educational perspective. The increased institutionalization and regulation of intercollegiate athletics have created a new and specialized career field composed of counselors, aca-
demic specialists, coaches, and technological and administrative support staff. This course will investigate the historical, philosophical, and ethical foundation of these services, focusing in particular on the academic advising and tutoring program for student athletes. (SP) Simons

258. Academic Support Services for Student Athletes. (3) Three hours of lecture per week. The increased institutionalization and regulation of intercollegiate athletics have created a new and specialized career field composed of counselors, academic specialists, coaches, and technological and administrative support staff. This course will investigate the historical, philosophical, and ethical foundation of these services, focusing in particular on the academic advising and tutoring 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 related to educational evaluation. Application to the making 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, professions, controls, incentives, etc., as they apply 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 teaching and clinical supervision of teachers in urban systems. The role of the urban school leader in supervising teachers. Tredway

262C. Personnel Administration in School Systems. (3) Three hours of lecture per week. Concerned with the analysis of personnel policies and procedures associated with the employment and evaluation of educational personnel. Formerly 288C. Tredway

262D. Research Group on the Working Lives of Teachers. (3) Course may be repeated for credit. Three hours of lecture per week. Must be taken on a satisfactory/unsatisfactory basis. 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 methods or substantive 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 285A. Introduction to sociological and socio-cultural research on teachers’ work and the organizational, occupational, and pedagogical contexts of teaching. Overview of research related to teachers’ work, followed by in-depth focus in one or two areas of theory development and empirical research, e.g., conceptions of teaching as work; representations of teacher knowledge and teacher learning; investigations of teachers’ communities of practice; conceptualizing and studying the school as workplace. (SP) Little

262F. Organizational Policy and Teachers’ Work. (3) Three hours of seminar per week. Must be taken on a satisfactory/unsatisfactory basis. Prerequisites: Introduction to the Principal Leadership Institute Program. This course will explore the relationship of local decision making as well as the processes by which decision making is permitted and required. (SP) Staff

265A. Economics of Education and Other Social Services. (3) Three hours of lecture and one hour conference 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 sectoral planning, economic aspects of innovation. Grubb, Stern

266A. Educational Resources and Finance. (3) Three hours of lecture per week. The course covers the resources necessary for education; financing from local, state, federal, and private sources; the effects of funding provisions on school-and class-level decisions; tax bases and their consequences; equity issues and court challenges like Serrano; and the relation between resources and outcomes. It concentrates on the funding of K-12 education, though higher education will also be included. Grubb, Stern

269. The Progressive Tradition in American Education. (3) Three hours of lecture per week. Progressive educators have long sought to center curriculum and pedagogy on the interest and activity of the child; to intervene in community life; and to make schools responsive to the needs of society. In order to understand today’s efforts to make schools responsive to students’ diverse interests, experiences, and needs, this course examines the sometimes conflicting goals of progressive education, its roots and evolution, and the difficulties in institutionalizing progressive practices in schools. Perlestein

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 urban school reform. This course examines the recent reform movement in U.S. city schools. We shall examine reform as a recurrent theme in public discussions of education. At the same time, reformers often charge that urban schools are in crisis and are highly resistant to their efforts. In order to understand the potential of individual reform proposals and strategies, this course examines the place of school reform in the institutional structure of schooling and the relationship of school reform to wider political relations and activity. Rather than examining sequentially individual reforms, this course will examine the range of reform agents and practices and different ways of understanding school reform. Particular attention is given to race and class as frames for understanding urban schooling. (F) Perlestein

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 constitutes one of the ways in which the Berkeley Evaluation and Assessment Research (BEAR) Center fulfills its role of supporting research. The seminar will change from semester to semester, focusing on the work of the faculty and students. Formerly 288B. Little

271B. Introduction to Qualitative Research Methods. (3) Three hours of lecture/discussion per week. Formerly 288B. Introduces principles and methods commonly associated with qualitative field research in the social sciences. Includes assigned readings on basic methodological topics; structured activities related to research design, research ethics and human sub-
jects protection, data collection, data organization and reduction, data analysis; and field research experience through individual or team projects. Course satisfies the qualitative methods requirement for students in the Policy, Organization, Measurement, and Evaluation (POME) program. Little

271C. Advanced Topics in Qualitative Research. (3) Three hours of lecture per week. Prerequisites: 271B or equivalent. Formerly 288C. An advanced topic in the field of qualitative research. Application of interpretive research to a particular area such as social inequality, poverty, or everyday learning, or the detailed consideration of an advanced aspect of the logic of interpretive inquiry. Little

274A. Measurement in Education and the Social Sciences. (4) Four hours of lecture per week. Formerly Educational Psychology 208A. Students will learn good measurement practice by constructing an instrument and investigating its properties (specifically, 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 in-
terviewing, standardized testing, and performance ass-
sessment. We will discuss both 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 Psych-
ology 208B. An introduction for graduate students to classical and item response theory from a theoretical viewpoint. Application of these techniques to a practical measure-
sion situation will be studied. Topics such as test bias, computerized and polytomous response modes will be discussed. Wilson

274C. Research Seminar in Measurement. (4) Course may be repeated for credit. Four hours of sem-
inar per week. Prerequisites: 274A or equivalent. Formerly Educational Psychology 208C. The seminar will cover current research in the areas of educational and psychological measurement. Topics will vary from year to year. Some examples are polyto-
mous 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 Psych-
ology 208D. Exploratory factor analysis, confirmatory factor analysis, and multidimensional item response theory. Wilson

274F. New Forms of Student Assessment: Char-
terizations 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 focus is on ‘performance assessments’—assessments 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 professional development, including life-sustaining 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 293L recommended 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 analyses to answer research questions or methods. Also provides additional integrative practical experiences with evaluation theory and methodology, and research questions of specific professional development programs, use of student data to validate curriculum, and analyzes the application of theory and methods in evaluation, theory-based evaluation. Students will focus their own evaluation studies, identify questions, develop instruments, collect data, and write/present an evaluation report. Holstetter

275C. Research Seminar in Data Analysis. (3) Course may be repeated for credit. Three hours of lecture per week. The seminar will address a current research issue in the area of educational statistics. Topics will vary from year to year. Some examples are: multilevel modeling, quasi-experimental research design, and meta-analysis. (F,S) Staff

275L. Educational Data Analysis Laboratory II. (1) Three hours of laboratory per week. Prerequisites: 293L and 293B, recommended or equivalent. Formerly 209L. Students use the program SYSTAT to do intermediate 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 hours of lecture per week. Formerly 293C. 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 evolving models of evaluation, emphasizes paradigmatic issues that emerge in different contexts, and integrates evaluation 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 different contexts and will serve as a foundation for the study and application of advanced evaluation methodology in subsequent seminars and apprenticeship experience. Holstetter

276B. Causal Inference in Non-experimental Designs. (4) Four hours of lecture per week. Prerequisites: 293B and 293L (may be taken concurrently) or consent of instructor. Formerly 293D. A formal analysis of various ideas related to causation with special emphasis on causal inference in program evaluation and the behavioral sciences more generally. Randomization, controlled experiments, and observational studies. Prospective designs as well as case-control designs. Direct causation, indirect causation. An analysis and critique of the relation of path models and latent variable models to the estimation of causal effects. Staff

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 293F. For students involved in an evaluation or assessment project as graduate student researchers or part of a practicum or apprenticeship project, this course is for the student responsibility of the course instructor. The emphasis in this course is on the practice of research. In the first semester students work with faculty mentors and in the seminar to carry out a field research project. Continuing both apprenticeship and seminar, this semester is devoted to an analysis of actual evaluations conducted (or in progress) within each defined context. The course will provide hands-on experience in the planning and design of different contexts and will serve as a foundation for the study and application of advanced evaluation methodology in subsequent seminars and apprenticeship experience. Holstetter

276D. Evaluation Theory. (3) Three hours of lecture per week. Prerequisites: 276A. This course will provide students with a basic understanding of prevalent evaluation theories, with systems for categorizing these theories, and with an understanding of the processes for theory development in evaluation. Holstetter

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 ex-ante, ex-post, on-going, and progress evaluation, theory-based evaluation. Students will focus their own evaluation studies, identify questions, develop instruments, collect data, and write/present an evaluation report. Holstetter

280B-280B. Proseminar: Sociocultural Critique of Education. (3) Three hours of seminar per week. Prerequisites: Consent of instructor. This interdisciplinary course examines sociocultural formations. It serves to reveal student thinking and capture students’ capacities to contribute to ‘good work’ valued by community of engaged scholars. Discussion of special topics, research papers, and seminar presentations. Recommended for doctoral students preparing dissertation proposals and dissertations. Perlstein

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 will be followed by a research proposal carried out 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 second in a sequence of courses on the qualitative form of research. In the first semester students work with faculty mentors and in the seminar to carry out a field research project. Continuing both apprenticeship and seminar, this semester is devoted to an analysis of actual evaluations conducted (or in progress) within each defined context. The course will provide hands-on experience in the planning and design of different contexts and will serve as a foundation for the study and application of advanced evaluation methodology in subsequent seminars and apprenticeship experience. Holstetter

280F. Dissertation Seminar. (3) Course may be repeated for credit. Three hours of seminar per week. Must be taken on a satisfactory/unsatisfactory basis. Recommended for doctoral students preparing dissertation proposals and dissertations. Staff

290B. Special Topic Seminar. (1-4) Staff

290D. Special Topic Seminar. (1-4) Staff

290E. Special Topics Seminar. (1-4) Staff

291A. The Educational System of the United States. (3) Three hours of lecture per week. Prerequisites: Consent of instructor. This course will focus on research and theory relating to American education to employment; the effects of education on earnings, and on earnings inequality; and the development of a “system” of workforce development since 1960. Grubb, Stern

292D. Popular Education. (4) Four hours of lecture per week. The empowerment of adults through democratically structured cooperative study and action directed toward achieving more just and peaceful social change. Emphasis on how education and alternative conceptions of the contributions of education to employment; the effects of education on earnings, and on earnings inequality; and the development of a “system” of workforce development since 1960. Grubb, Stern

293A. The Educational System of the United States. (3) Three hours of lecture per week. Prerequisites: Consent of instructor. This course will focus on research and theory relating to American education to employment; the effects of education on earnings, and on earnings inequality; and the development of a “system” of workforce development since 1960. Grubb, Stern

293B. Causal Inference in Non-experimental Designs. (4) Four hours of lecture per week. Prerequisites: 293B and 293L (may be taken concurrently) or consent of instructor. Formerly 293D. A formal analysis of various ideas related to causation with special emphasis on causal inference in program evaluation and the behavioral sciences more generally. Randomization, controlled experiments, and observational studies. Prospective designs as well as case-control designs. Direct causation, indirect causation. An analysis and critique of the relation of path models and latent variable models to the estimation of causal effects. Staff

293C. 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 293F. For students involved in an evaluation or assessment project as graduate student researchers or part of a practicum or apprenticeship project, this course is for the student responsibility of the course instructor. The emphasis in this course is on the practice of research. In the first semester students work with faculty mentors and in the seminar to carry out a field research project. Continuing both apprenticeship and seminar, this semester is devoted to an analysis of actual evaluations conducted (or in progress) within each defined context. The course will provide hands-on experience in the planning and design of different contexts and will serve as a foundation for the study and application of advanced evaluation methodology in subsequent seminars and apprenticeship experience. Holstetter

293D. Qualitative Methods. (3) Three hours of seminar per week. Prerequisites: Consent of instructor. This course examines the relationship between education and other sectors of society. Students will focus their own evaluation studies, identify questions, develop instruments, collect data, and write/present an evaluation report. Holstetter

293E. Research Group on Education and Social Change. (Course may be repeated for credit. Two hours of discussion/analysis per week. Prerequisites: Consent of instructor. Graduate research group specializing in research on teaching, learning, and social change across urban landscapes and within their myriad contexts (e.g., schools, families, neighborhoods, workplace and community organizations) that strengthens preparation for research and action through consultation on all stages of the research process and supports the development and sustenance of a community of engaged scholars. Discussion of special topics as relevant. (F,S) Seyer-Ochi

293F. Urban Education. (3) Three hours of seminar per week. This course will explore the relationship between macroeconomic and political trends and public education in inner city schools. The impact of these trends and phenomena on school climate, teacher morale, and academic achievement will be investigated through a combination of reading and field research in Oakland and Berkeley schools. An examination and evaluation of current proposals for reform of urban schools will also be included. (F,S) Seyer-Ochi, Staff

294A. Philosophy of Education. (3) Three hours of lecture per week. Philosophical analysis applied to current educational problems and key concepts. (F,S) Tredway

295C. Historical Development and Contem- porary Status of American Education. (3) Three hours of lecture per week. Prerequisites: Consent of instructor. This course addresses comprehensive school health education, including content areas of health instruction in the California Health Framework for teachers K-12, e.g., nutrition, communicable 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 role as a member of a comprehensive health team working in a lifelong health education setting with guidance from a school health advisory committee. An emphasis on decision making regarding consumerism, environment, cultural and social justice, and sex. Staff

295D. Research Apprenticeship and Qualitative Methodology Seminar I. (3) Three hours of seminar per week. Prerequisites: 290C or consent of instructor. This is the second in a sequence of courses on the qualitative form of research. In the first semester students work with faculty mentors and in the seminar to carry out a field research project. Continuing both apprenticeship and seminar, this semester is devoted to an analysis of actual evaluations conducted (or in progress) within each defined context. The course will provide hands-on experience in the planning and design of different contexts and will serve as a foundation for the study and application of advanced evaluation methodology in subsequent seminars and apprenticeship experience. Holstetter

295E. Popular Education. (4) Four hours of lecture per week. The empowerment of adults through democratically structured cooperative study and action directed toward achieving more just and peaceful social change. Emphasis on how education and alternative conceptions of the contributions of education to employment; the effects of education on earnings, and on earnings inequality; and the development of a “system” of workforce development since 1960. Grubb, Stern

295F. Dissertation Seminar. (3) Course may be repeated for credit. Three hours of seminar per week. Must be taken on a satisfactory/unsatisfactory basis. Recommended for doctoral students preparing dissertation proposals and dissertations. Staff
tions of technological and organizational change for education. Shakesen
293A. Data Analysis in Education Research, (4) Four hours of lecture per week. Prerequisites: Consent of instructor. Introduces students to quantitative statistical methods for educational research. Emphasizes parametric and non-parametric test statistics, particular of group differences based on means, medians, proportions and correlation coefficients. Section 1 takes a conceptual and heuristic approach and includes a module on distribution free statistics. Section 2 takes an algebraic approach and includes a module on multiple regression. High school algebra is strongly recommended for section 2. (F,SP) Staff
293L. Educational Data Analysis Laboratory. (1) Two hours of lecture and three hours of laboratory per week. Prerequisites: Consent of instructor. Computer programs are presented and discussed. Staff
294A. Thesis Seminar: Policy, Organization, Measurement, and Evaluation (POME). (1-4) Course may be repeated for credit. Three hours of seminar and four hours of independent study per week. Formerly 294. Recommended for M.A. students working on seminar papers or theses, and doctoral students preparing dissertation proposals. Topic varies with instructor. Staff
294B. Thesis Seminar—ELL, (1-6) Course may be repeated for credit. One to three hours of seminar per week. Additional units earned by completing four hours of independent research per week. Prerequisites: Consent of instructor. Formerly Education in Language and Culture 291 A-B. Advanced group study in education. Topics vary from semester to semester. May consist of organized lectures or seminars. Prerequisites: One of 293A-293B or 294A-294B. (SP)
298D. Group Study Seminar. (1-8) Staff
298E. Group Study and Research, (1-6) One to six hours of seminar per week. Must be taken on a satisfactory/unsatisfactory basis. Formerly Educational Psychology 298 D. Group study and research on special problems and topics. (F,SP) Staff
299. Special Study and Research. (1-12) Prerequisites: Consent of instructor. Individual study in preparation for the doctoral qualifying examination or dissertation. Topic varies with the research area in which the group is working. (F,SP) Staff
299D. Group Study for Graduate Students—SCS. (1-3) One to three hours of lecture/seminar per week. Formerly Social and Cultural Studies in Education 299 D. Research on special problems and topics not covered by courses or seminars. (F,SP) Staff
301. Individual Study for Master's Students. (1-8) Course may be repeated for credit. Three hours of independent study per week plus independent research. Must be taken on a satisfactory/unsatisfactory basis. Formerly Social and Cultural Studies in Education 299. Recommended for degree students working on seminar papers, theses, or dissertation proposals. Topics include the adoption of a thesis topic, research design, statistical analysis. Staff
304A. Research Practicum in Administration. (1-6) Staff
304B. Research Practicum in Policy, (1-6) Staff
304C. Research Practicum in Measurement, (1-6) Staff
304D. Research Practicum in Evaluation, (1-6) Staff
304E. Research Practicum in Research Design, (1-6) Staff
308. Teaching Assistants Practicum. (1-6) Prerequisites: Admission to a teaching credential program. Three hours of lecture and one hour of fieldwork per week. Must be taken on a satisfactory/unsatisfactory basis. Prerequisites: Consent of instructor. Individual study in preparation for the doctoral qualifying examination. One unit of credit for each four hours of conference and independent research per week. Staff
309A-390B. Supervised Teaching for Secondary English, (7,8) Credit and grade to be awarded on completion of sequence. Prerequisites: Admission to a teaching credential program. Twenty-four to twenty-eight hours of supervised teaching in public school classrooms and one hour of lecture per week. Sequence begins with the fall semester. Zillco
390C. Supervised Teaching in Elementary Education, (1-8) Prerequisites: Admission to a teaching credential program. Formerly Educational Psychology 390. Fieldwork for teaching credential. Supervised teaching may begin with the opening of the public schools in the fall and extend through the spring semester. Peretti
390D. Supervised Teaching in Mathematics and Science for Secondary Schools, (2-6) Course may be repeated for credit. Two hours of lecture and two to ten hours of fieldwork per week. Prerequisites: Admission to a teaching credential program. Formerly Education in Mathematics, Science, and Technology 390. Fieldwork for teaching credential. Supervised teaching may begin with the opening of the public schools in the fall and extend through the spring semester. Zimmerlin
391A. Technology, Curriculum, and Instruction I. (1) One hour of seminar and two hours of laboratory per week. Prerequisites: Admission to the Development Teacher Education Program. Part 1 of a 2-course sequence meeting technology requirements for the California Multiple Subject Credential. Introduction to basic computer skills and applications. Levenson, Peretti
391B. Technology, Curriculum, and Instruction II. (1) One hour of seminar and two hours of laboratory per week. Prerequisites: 391A. Part 2 of a 2-part sequence meeting technology requirements for California Multiple Subject Credential. This second part will focus on applications and functions of classroom technology. (SP) Levenson, Peretti
413A-413B. 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
413C-413D. School-Based Internship in School Psychology. (6,6) Course may be repeated for credit. Two hours of lecture and three days of fieldwork per week. Supervised assignment in a school district in capacity of school psychologist. Staff
413L. Consultation for School Psychology Students, (1) Course may be repeated for credit. One hour consultation on campus and six hours of field work per week. Must be taken on a satisfactory/unsatisfactory basis. Prerequisites: Must be taken concurrently with 213C-213D and 413C-413D. Staff
440. Seminar for ARLLP Program Field Work and Master of Arts Thesis (Plan II). (2-5) Course may be repeated for credit. Two hours of seminar and six hours of field work per week. Prerequisites: Admission to a teaching credential program. Formerly Educational Psychology 440. Course may be repeated for credit. Two hours of field work per week. Must be taken on a satisfactory/unsatisfactory basis. Prerequisites: Consent of instructor. Individual study in preparation for the doctoral qualifying examination. Staff
460A. Practicum in School Site Management I, (3) Three hours of lecture and one hour of field work per week. Prerequisites: Admission to Administrative Services Credential program. Supervised field experience, conferences, and colloquium. Staff
460C-460D. Research Practicum in Administration, (2-2) One hour of lecture and three hours of field work per week. Prerequisites: 294A and admission to the Principal Leadership Institute. This course engages master's students in collecting and analyzing data on school system problems and in implementing solutions to improving educational practices or solving important problems in school systems. Tredway
460I. Field-Based Practicum: Internship in Educational Administration II-4. (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 Cre
Electrical and Computer Engineering / 225

Electrical Engineering and Computer Sciences (College of Engineering)

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Ph.D. California Institute of Technology.

Assistant Professor
Martin Vetterli
Doctor of Science (Adjunct)

Assistant Professor
J. Marsden
Ph.D. (Emeritus)

Professor
Satish Rao
Ph.D. Massachusetts Institute of Technology.

Professor
Alexander H. Barnett
Ph.D. University of California, Los Angeles.

Professor
Laurent El Ghaoui
Ph.D. Stanford University.

Professor
Peter Bartlett
Ph.D. Australian National University.

Professor
Animesh Vasily
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Kameshwar Poolla
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Yves Lepers
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Scott Shenker
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Edward L. Keller
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James Kubiatowicz
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David A. Hodges
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The Electrical and Computer Engineering Program

The department offers two programs: Electrical and Computer Engineering (ECE) and Computer Science (CSE). Students working for the B.S. degree select an option within their program; they are then assigned an appropriate adviser on the basis of their selection. Students in both programs will pursue the following objectives:

- Gain the ability to analyze and solve electrical and computer engineering problems through application of fundamental knowledge of mathematics, science, and engineering.
- Gain the ability to identify, formulate, and solve challenging engineering problems.
- Learn to apply modern skills, techniques, and engineering tools to create electronic systems.
- Learn to communicate their ideas to be effective in collaboration with other members of engineering teams.
- Acquire the background in humanities and social sciences required to be effective as engineers, leaders, and citizens.
- Achieve an understanding of conceptual foundations and emerging applications over a broad range of electrical engineering, computer engineering, and computer science subjects.
- Gain professional maturity through selection of their individual courses of study.

Electrical and Computer Engineering Program

The ECE options (described below) include Option I (Electronics), Option II (Communication, Networks and Systems), Option III (Computer Systems), and Option V (General). (Option IV falls under the Computer Science and Engineering Program, below.) Students are encouraged to develop an individual program in consultation with their faculty adviser. The transcripts of students in these options indicate that their degree is from the Electrical and Computer Engineering Program.

Communication, Networks, and Systems (Option II) is for students interested in networks, control, robotics, digital and analog communications, computer networks, signal processing, systems design and optimization, and power systems planning and control; and for students interested in biology or medicine as well as electrical engineering, including biological sensors and signals, signal and image processing, and analysis and modeling of biological systems.

Computer Systems (Option III) is for students interested in machine architecture and logical design, operating systems, database systems, programming systems and languages, and digital devices and circuits.

Computer Science (Option IV) is for students interested in design and analysis of algorithms, complexity theory and other theoretical topics, artificial intelligence, and computer graphics.

General Option (Option V) is for students whose interests are broad or are not yet focused on a specific field. This flexible option enables students to explore several areas of electrical engineering and computer sciences.

Double Majors

In addition, the department offers double major programs designed to help students qualify for employment in either of two major fields of engineering, or for positions where competence in both fields is required. Both majors are listed on the student’s transcript. Two such double majors are currently established:

EECS/Materials Science and Engineering: For students interested in materials and devices, a double major in EECS/MSE can be valuable. The program combines the study of materials from a broad perspective, as taught in MSE, with the study of their applications in electronic devices and circuits, as taught in EECS.

EECS/Nuclear Engineering: The EECS/NE double major combines the traditional EE program with one in the nuclear sciences. Nuclear engineering shares with EE a concern for electrical power generation, automatic control, computer sciences, and plasmas.

Curriculum for the Bachelor’s Degree

A minimum of 120 semester units is required for the bachelor’s degree in EECS, including:

1. At least 30 units of natural science, mathematics, and statistics, including:
   - (a) At least 11 units of natural science, including Physics 7A-7B or H7A-H7B, and one course chosen from among the following:
     - Physics 7C or H7C (recommended), Chemistry 1A (recommended), Biology 1A (recommended), Astronomy 7A-7B, Biology 1B, Chemistry 1B, 3A-3B, 4A-4B, and 5, Molecular and Cell Biology 32/32L, or an upper division course in astronomy, biology, chemistry, geology and geophysics, integrative biology, molecular and cell biology, physics or plant biology.
   - (b) Math 1A-1B, 53, and 54.

2. A total of 45 units of engineering courses, including at least 20 units of upper division EECS courses. A student may count any letter-graded course (lower or upper division) in the College of Engineering toward the 45-unit requirement. We encourage students to consider taking courses outside the department. In the past, we have found the following courses to be of particular interest: CEE 106 and 130, E36, 45, 66, 115, 118, 120, 166, 177; MSE 102 and 111; ME 102A, 104, 135, and 136; and NE 101 and 107. This list is suggestive, not exclusive.
Graduate Program

To prepare graduate students for work in the rapidly developing fields of electrical engineering and computer sciences, the department offers a wide selection of courses, seminars, and flexibility in meeting degree requirements. Since no single sequence of courses is required, students are free to design programs to suit their particular needs and interests, in consultation with a faculty adviser in their field.

Graduate degree programs are available as preparation for 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 two three-semester courses. Students normally complete the Doctor of Philosophy program 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 non-technical subject such as law, business administration, etc. The Doctor of Engineering program, of about two years duration, builds on the course work for the Master of Engineering and requires a one-year internship in a design and development organization. Students with either a B.S. or an M.S. who intend to study for the D.Eng. program should apply first for the M.Eng. program.

Details of the available fields of graduate study in electrical engineering and computer sciences are described in the bulletin of the College of Engineering. For further information on graduate programs and procedures, see the Electrical and Computer Engineering Sciences Graduate Information Notes at http://www.eecs.berkeley.edu/GradNotes/grad-notes.html.

Computing Service Courses

You may earn a total of at most 5 units of credit toward graduation and labeled as "computing service" courses, which include CS 3, the CS 9 courses, and IDS 110 and 110L. You will receive no more than 1 unit 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 your study list falls within the minimum and maximum unit loads.

Course Materials Fee

The Department of Electrical Engineering and Computer Sciences charges a mandatory fee for Electrical Engineering 143. The amount of the fee is listed in the Schedule of Classes.

Electrical Engineering

Lower Division Courses

1. EECS: The First Course. (2) One hour of lecture and two hours of laboratory per week. Introduction to the concepts and techniques of electrical engineering, elementary circuits, and to forefront topics in electrical engineering and computer sciences in particular, involving hands-on experimentation, lectures, demonstrations, readings, and practice with written and oral communication. Course intended for first-year undergraduates. (F,SP) White

20N. Structure and Interpretation of Systems and Signals. (4) Three hours of lecture and three hours of laboratory per week. Prerequisites: Mathematics 1B. 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 the course. (F,SP) Lee

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 pass/NoPass 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 and semester to semester. (F,SP)

40. Introduction to Microelectronic Circuits. (4) Students will receive no 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. Basic building blocks and concepts and analysis techniques in the context of digital electronic circuits.Transient analysis of CMOS logic gates, basic integrated-circuit technology and layout. (F,SP)

42. Introduction to Digital Electronics. (3) Two hours of lecture and one hour of discussion per week. Prerequisites: Mathematics 1B. Electronic circuit elements, theory, digital circuits applications. Digital signal processing, switch, and data analysis. Graphical methods for nonlinear circuits. Transient, Norton equivalents, transistors. Dependent source, amplifiers. Operational amplifiers and comparators. MOS transistors and CMOS models for logic circuit analysis. Transfer curves, Symmetry of PMOS and NMOS devices and CMOS circuits. Resistance and capacitance models for stage delay. (F,SP) Staff

43. Introductory Electronics Laboratory. (1) Two hours of laboratory/discussion per week. Must be taken on a pass/NoPass basis. Prerequisites: 42 (may be taken concurrently) or equivalent or consent of instructor. Using and understanding electronics lab equipment such as power supplies, function generator, multimeter, curve-tracer, and RLC-meter. Includes a term project of constructing and testing a robot or other appropriate electromechanical device. (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 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 across the campus. Sophomore seminars offer opportunity for close 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. (F,SP)

Upper Division Courses

100. Electronic Techniques for Engineering. (4) Three hours of lecture and three hours of laboratory per week. Prerequisites: Mathematics 1B, Physics 7B. Analysis of passive circuits, sinusoidal steady-state response, transient response, operational amplifiers, digital circuits. Prerequisites: At discretion of instructor. This course covers the fundamental circuit and device concepts needed to understand analog integrated circuits. After an overview of the basic properties of semiconductor devices, the p-n junction and MOS capacitors are described and 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 discussed. Sinusoidal steady-state
signals are introduced and the techniques of phasor analysis are developed, including impedance and the magnitude and phase response of linear circuits. The frequency responses of single and multi-stage amplifiers are analyzed. Differential amplifiers are introduced. (F,SP) (Sastry, Sanders, Cheung, King)

110. Electromagnetic Fields and Waves. (4) Three hours of lecture and one hour of discussion per week. Prerequisites: 40, Mathematics 53, 54, knowledge of phasor analysis (e.g. as taught in 105). Formerly 117A-117B. Review of static electricity and magnetism, propagation of radio waves, light, and microwaves. (F,SP) (Ioana, Spalding, Staff)

112. Introduction to Communication Networks. (4) Three hours of lecture, one hour of discussion, and one hour of laboratory per week. Prerequisites: Computer Science 61B, Mathematics 53 or 54. This course is an introduction to the analysis of computer networks. We will focus on the concepts and fundamental design principles that have contributed to the Internet’s scalability and robustness and survey the underlying technologies: TCP/IP, ATM, DSL, optical links—that have led to the Internet’s phenomenal success. Topics include layering, congestion control, routing, addressing, multicast, packet scheduling, network security, and networking/programming interfaces. (F,SP) (Gustafson)

123. Digital Signal Processing. (4) Three hours of lecture, one hour of discussion, and one hour of laboratory per week. Prerequisites: 120. Discrete time signals and systems; Fourier and Z transforms, DFT, 2D, 3D, and multidimensional versions. Digital signal processing topics: filter design; signal sampling; frequency-domain filtering; realization methods; optimization methods, 2-dimensional filter design. (SP) (Staff)

125. Introduction to Robotics. (4) Three hours of lecture and one hour of discussion per week. Prerequisites: 120 or equivalent, signal and image processing, an introduction to the kinematics, dynamics, and control of robot manipulators, robotic vision, sensor fusion, and the programming of robots. The course will cover forward, inverse, and Jacobian matrices; optimization methods; and computer vision. (Trendk) (F,SP) (Staff)


128. Feedback Control. (4) Three hours of lecture and three hours of laboratory per week. Prerequisites: 120. Analysis and synthesis of continuous and sampled-data feedback systems. Analysis of feedback. Design by root locus, frequency response, and state space methods, with a comparison of techniques. Case studies. (F) (Sanders)

130. Integrated-Circuit Devices. (4) 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, robotics, motion detection, data compression, security communication, bionic eye, auto waves, and Turing patterns. (SP) (Chua)

131. Semiconductor Electronics. (3) Three hours of lecture per week plus several one hour mini-laboratories. Prerequisites: 130 (which may be taken concurrently). Physics of solid-state electronics. Review of quantum mechanical principles, crystal structure, lattice vibrations, band theory, electronics and holes, diffusion and drift, recombination, high-field phenomena, optical effects, device applications. Several one-hour mini-labs done in pairs with the aid of a Teaching Assistant. (F) (Gustafson)

133. Microfabrication Equipment Laboratory. (2) Three hours of lecture and one hour of laboratory per week. Prerequisites: 120. Basic knowledge of equipment and measurement technology. (SP) (Guy) (Staff) (M incoming students not required (e.g., Chemical Engineering 179, Electrical Engineering 143, Mechanical Engineering 101, 122, Materials Science 111, 123, 125. Experiments and simulations illustrating the fundamental principles of equipment and measurement technology for microelectronic and microelectromechanical fabrication and manufacturing. The experiments involve investigation and measurements of high vacuum systems, plasma-assisted etching and film deposition, high temperature silicon oxidation, photolithography, spin coating, chemical-mechanical polishing, and etching. Also listed as Mechanical Engineering C123 and Materials Science and Engineering C133. (SP) (Staff)

140. Linear Integrated Circuits. (4) Three hours of lecture and one hour of laboratory per week. Prerequisites: 105. Single and multiple stage transistor amplifiers. Operational amplifiers. Feedback amplifiers. 2, 3, and 4 transistor circuits. Analysis and design of switched capacitor filters. (SP) (Bokor, King)

141. Introduction to Digital Integrated Circuits. (4) Three hours of lecture, one hour of discussion, and three hours of laboratory per week. Prerequisites: 120. Circuits and systems design for communication, computer, and control systems. An introduction to design methodologies, including hands-on experience. (F,SP) (Brodersen)

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 digital circuits for communication systems, including an emphasis on integrated circuits for wireless communication systems. Analysis of distortion in amplifiers with application to radio receiver design. Power amplifier design with application to wireless radio transmitters. Class A, Class B, and Class C power amplifiers. Radio-frequency mixers, oscillators, phase-locked loops, modulators, and demodulators. (F) (Moto)

143. Microfabrication Technology. (4) Three hours of lecture and three hours of laboratory per week. Prerequisites: 40 and Physics 7B. Integrated circuit device fabrication and surface micromachining technology. Thin film deposition, ion implantation, optical lithography, etching, contacts and interconnections, and process integration issues. Device design and mask layout, relation between physical structure and electrical/mechanical performance. MOS transistors and poly-Si surface microstructures will be fabricated in the laboratory and evaluated. (F,SP) (Cheung, King)

C145B. Image Processing and Reconstruction Technology. (4) Three hours of lecture and one hour of laboratory 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 imag
ing systems including magnetic resonance, X-ray tomography, positron emission tomography, ultrasound, and biomagnetic imaging. Data analysis including hypothesis testing, parameter estimation by least squares, and computer-aided kinetic modelling. Field trips to medical imaging laboratories. Also listed as Bioengineering C165. (SP) Budinger

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 circuits for low-level differential amplification and analog to digital conversion; 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 design of circuits for sensing and controlling physical quantities. Also listed as Bioengineering C145L. (F) Denero

C145M. Introductory Microcomputer Interface Laboratory. (3) Two hours of lecture and three hours of laboratory per week. Prerequisites: 40 and 60B. 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 with microprogrammable digital counter/timer, parallel I/O port, and analog I/O port. Circuit components include 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 the human voice, digital filters, and control using Fourier deconvolution. Lectures cover principles explored in the laboratory exercises and design of microcomputer-based systems for data acquisition, analysis, and control. (SP) Denero

C145M. Introductory Microcomputer Interface Laboratory. (3) Two hours of lecture and three hours of laboratory per week. Prerequisites: 40. Computer Science 61B or equivalent. Knowledge of programming or consent of instructor. 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 with microprogrammable digital counter/timer, parallel I/O port. Circuit components include 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 the human voice, digital filters, 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 Bioengineering C145M. (F) Denero

192. Mechanic Design Laboratory. (3) One and one-half hours of lecture and ten hours of laboratory per week. Prerequisites: 120, Computer Science 61B or 61C, 150 or equivalent. Design project course, focusing on application of theoretical principles in engineering design 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) Fetting

198. Directed Group Study for Advanced Undergraduates. (1-4) Course may be repeated for credit. To vary with section. Must be taken on a pass/no pass basis. Prerequisites: 2.0 GPA or better; 60 units completed in the time and frequency domain, and coherence and noncoherent reception. Diversity techniques over time, frequency, and space.

199. Supervised Independent Study. (1-4) Enrollment is restricted; see the Introduction to Courses and Curricula section of this catalog. Individual conferences must be arranged and a faculty advisor must be secured. 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: Computer Engineering 200A or consent of instructor. Group study of selected topics in strategic computing and communications technology and organization. Topics include the semantics of reactive systems, temporal logic model checking, the theory of omega automata, state space reduction techniques, compositional and hierarchical reasoning, real time. Offered alternate years. (F,SP) Herzlinger

C202. Computer-Aided Verification. (3) Three hours of lecture per week. Prerequisites: 218B and Computer Science 172 or consent of instructor. Introduction to the theory and practice of formal methods for the design and analysis of concurrent and embedded systems. Focus on algorithmic techniques for checking logical and timing properties of circuits and communication protocols. Topics include the semantics of reactive systems, temporal logic model checking, the theory of omega automata, state space reduction techniques, compositional and hierarchical reasoning, real time. Offered alternate years. (SP) Denero


C221. Nonlinear Systems—Analysis, Stability and Control. (3) Three hours of lecture per week. Prerequisites: 221A (may be taken concurrently). Basic graduate course in non-linear systems, Second Order systems. Numerical solution methods, the describing function method, linearization, Stability. Direct and indirect methods of Lyapunov. The Lur'e problem-Popov, circle criterion. Input-Output stability. Additional topics include: bifurcations of dynamical systems, introduction to the “geometric” theory of control for non-linear systems, and dissipative dynamical systems. (SP) Sastry

C223. 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. System identification. Nonlinear filtering, Stochastic control, Adaptive control. (SP) Staff


C226B. Fundamentals of Wireless Communication. (3) Three hours of lecture per week. Prerequisites: 121, 226A, or equivalent. Introduction of 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: TDMA, CDMA, OFDM. Capacity of wireless channels. Multiple access communication. Multiple access systems: spatial multiplexing, space-time codes. Examples from existing wireless standards. (SP) Tse

225A. Digital Signal Processing. (3) Three hours of lecture per week. Prerequisites: 123 and 126 or solid background in stochastic processes. Advanced techniques in digital signal processing. Stochastic signal processing, parametric statistical signal models, and adaptive filterings. Application to spectral estimation, speech and audio coding, adaptive equalization, noise cancellation, VLSI, and linear prediction. (SP) Ramchandran

225B. Digital Image Processing. (3) Three hours of lecture per week. Prerequisites: 123. 2-D sequences and systems, separable systems, projection slice theorem, reconstruction from projections and partial Fourier information. 2 transform, different equations, recursive computability, 2D DFT and FFT, 2D FIR filter design; human eye, perception, psychophysical vision properties, photometry and colorimetry, optics and image systems; image enhancement, image restoration, geometrical image modification, morphological image processing, halftoning, edge detection, image compression; scalar quantization, lossless coding, huffman coding, source coding, statistical techniques and transform coding; vector quantization, motion estimation, standards; JPEG, MPEG, H.264, pre- and post-processing, image and video coding in noisy channels. (F,SP) Zakhor


229D. Audio Signal Processing in Humans and Machines. (3) Three hours of lecture per week. Prerequisites: 123 or equivalent; Statistics 200A or equivalent; or graduate standing and consent of instructor. Introduction to relevant signal processing and bases of pattern recognition. Introduction to coding, synthesis, and recognition. Models of speech and music production and perception. Signal processing for speech analysis. Pitch perception and auditory spectral analysis with applications to coding. Elementary vocoders and other popular speech vocoders. (SP, F) Anantharam, Varaiya

227A. Introduction to Convex Optimization. (3) Three hours of lecture per week. Convex optimization is a class of nonlinear optimization problems where the objective to be minimized, and the constraints, are both convex. Contrarily to the more classical linear programming framework, convex programs often go unrecognized, and this is a pity since a large class of convex optimization problems can now be efficiently solved. In addition, it is possible to address hard, non-convex problems (such as “combinatorial optimization” problems) using convex approximations that are more efficient and practical. The 3 problems covered in this class are:

227B. Convex Optimization and Approximation. (3) Three hours of lecture per week. Prerequisites: 227A or consent of instructor. Convex optimization as a systematic approximation tool for hard decision problems. Approximation to problems of stochastic programming problems, of robust optimization problems (i.e., with optimization problems with unknown but bounded data), of optimal control problems, and non-differentiable optimization problems. Applications in robust engineering design, statistics, control, finance, data mining, operations research. (F) El-Ghaoui

228A. High Speed Communications Networks. (3) Three hours of lecture per week. Prerequisites: 122, 226A, D.EE227. Introduction to relevant signal processing and basics of pattern recognition. Architectural trade-offs. Synthesis techniques. (SP) Varaiya, Waidyanatheran

228B. Communication Networks. (2) Two hours of lecture per week. Prerequisites: 122 and 226A, or equivalent. Formerly 228. Principles of design and analysis of communications networks. Circuit, packet, and hybrid switching approaches. Protocols, including setup, routing, flow control error recovery. MM1 and M/M/1 queues; analysis of the performance of communication networks, including delay and blocking. (SP) Varaiya, Waidyanatheran

229. Information Theory and Coding. (3) Three hours of lecture per week. Prerequisites: 226 recommended, Statistics 200A or equivalent. Formerly ECECS 229B Fundamental bounds of Shannon theorem 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 mathematics required). Information theory not necessary. Error control codes are an integral part of most communication and recording systems where they are primarily used to provide resilience to noise. In this course, we will cover the basic tools of error control coding for reliable digital transmission and storage. We will discuss the major classes of codes that are important in practice, including Reed Muller codes, convolutional codes, concatenated codes, turbo codes, and 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 block codes; Reed Muller codes; Galois fields; linear block codes over a finite field; cyclic codes; BCH and Reed Solomon codes; convolutional codes, trellis coding, 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: 130 or equivalent. Physical principles and 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 systems, short-channel and high field effects, device modeling, and impact on analog, digital circuits. (SP) King, Subramanian


233. Lightwave Systems. (3) Three hours of lecture per week. Prerequisites: 120 and 121 or equivalent; 136 recommended. Transmission through optical fibers-dispersion, attenuation, nonlinear effects (solitons). Direct-detection systems: analog and digital modulation, transmitter design, receiver design, noise properties of single and multimode fiber links, dependence on source coherence, subcarrier and multi-channel CATV analog transmission issues the role of optical fiber amplifiers. Coherent communication: FM phase modulation, analog and digital modulation, optical amplifiers. (SP) Kao, Lau

234A. Quantum and Optical Electronics. (3) Three hours of lecture per week. Prerequisites: 137A or equivalent. Interaction of radiation with atomic and semiconductor systems, density matrix treatment, semiclassical laser theory (Lamb’s), laser amplifiers, semiconductor lasers, Q-switching and mode-locking, noise in lasers and optical amplifiers. Nonlinear optics, phase-conjugation, electrooptic and acousto-optics and magnetooptic, coherent optics, optical systems, integrated optics. (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, chemically reactive plasmas. Including collisions, 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 Physics and Technology C239. Offered alternate years. (SP) Lieberman, Neureuther


241. Advanced Digital Integrated Circuits. (3) Three hours of lecture per week. Prerequisites: 140. Analysis and design of MOS and bipolar large-scale integrated circuits at the circuit level. Fabrication processes, device characteristics, parasitic effects static and dynamic digital circuits for logic and memory func-
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 must be included. MOS, bipolar and BiCMOS circuits, audio and video power amplifiers, optimum performance of near-sinusoidal oscillators and frequency-translation circuits. Phase-locked loop ICs, analog multipliers and voltage-controlled oscillators; advanced components for telecommunication circuits. Use of new CAD tools and systems. (F) Meyer, Niknejad.

243. Advanced IC Processing and Layout. (3) Three hours of lecture per week. Prerequisites: 143 and 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 related to the development of computer aids for integrated circuit design. The course will emphasize state-of-the-art and both of 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, testing, and interconnection 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), Micro-and nano-fabrication processes, including silicon surface and bulk micromachining and non-silicon micromachining. Integration strategies and assembly processes. Microsensor and microactuator devices: electrostatic, piezoresistive, piezoelectric, thermal, magnetic transduction. Electromechanical 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 aimed to provide basic understanding of integrated circuit (IC) processes and microelectromechanical system (MEMS). Technologies including analyses, design, and fabrication 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-, 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 of analog and mixed-integrated circuit design is the focus of this course. The emphasis is on analog design and emphasis is placed on integrated analysis and design of integrated analog and digital and digital-to-analog interfaces in CMOS and BiCMOS VLSI technology. Analog-digital converters, digital-analog converters, sample/hold amplifiers, switched-capacitor filters, R2F integrated analog electronics, synthesizers, LNA’s, and baseband processing. Low power mixed signal design. Data communications functions including clock recovery and synchronization. Communication-based analog design including simulation and synthesis. Boser

248. 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, Design of system methodologies and foundations, Platform-based design and communication-based design and their relationship with design time, re-use, and performance. Models of computation. Design capture, manipulation, verification, and synthesis. Mapping into architecture and system platforms. Performance estimation. Scheduling and real-time requirements. Synchronous and asynchronous design. Protocol driven systems. Synthesis fundamentals. (SP) Keutzer

290A. Advanced Topics in Electrical Engineering. Course may be repeated for credit. One to three hours of lecture per week. Prerequisites: Consent of instructor. This is the current state of research in various subjects through special seminars on topics to be selected each year, informal group studies of special problems, group participation in comprehensive design projects, 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

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 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. (and other doctoral degrees). (F,SP) Staff

Professional Courses

301. Teaching Techniques for Electrical Engineering. (1) One hour of seminar per week. Must be taken on a satisfactory/unsatisfactory basis. Prerequisites: Graduate standing. Weekly seminars and discussions of effective teaching techniques in electrical engineering. Student and self-evaluation. Course is intended to orient graduate student instructors to teaching in the Electrical Engineering department at Berkeley. (F) Staff

302. Designing Computer Science Education. (2) Two hours of lecture per week. Prerequisites: Computer Science 301 or two semesters of GSI experience. Discussion, practice, and review of research concerning issues relevant to the teaching of computer science; curriculum and topic organization, presentation, technology, grading, staff management. (SP) Clancy

Computer Science

Computer Science courses numbered lower than 10 are subject to the "computing service" course restriction. See the Computer Science Course Services section preceding the Electrical Engineering course listings.

Lower Division Courses

3. Introduction to Symbolic Programming. (4) Requivalent to computer science service C3. 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,SP) Clancy

3L. Introduction to Symbolic Programming (Self-Paced). (1-4) Refer to computer science service course restrictions. Course may be repeated up to 4 times to four hours of discussion and three to nine hours of laboratory per week. Prerequisites: High school algebra. The same 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

*Professor of the Graduate School
†Recipient of Distinguished Teaching Award

Prefixes: "C" denotes a cross-listed course with Computer Science. "AC" suffix denotes satisfies American culture requirement.
9A. Fortran and Matlab 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. Computation, 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

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. This course provides the practice with the use of pointers and linked data structures that is assumed as prerequisite for 9C and 9F. (F.S.P) Clancy

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, Computation, 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

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 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

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 similar to that gained in 61A or Engineering 77. DOS or UNIX experience. Use of UNIX utilities and scripting facilities for customizing the programming environment, organizing files (possibly in more than one computer account), implementing a personal database, reformatting text, and searching for online resources. (F.S.P) Clancy

9F. C++ for Programmers. (1) Refer to computer science service course restrictions in the General Catalog. 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 aimed at students who already know how to program. (F.S.P) Clancy

9G. JAVA for Programmers. (1) One hour of self-paced per week. 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; streams; and linked structures; exceptions; threads. (F.S.P) Clancy

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. 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. Units set by the faculty, but the suggested limit is 25. (F.S.P) Clancy

47A. Completion of Work in Computer Science 61A. (1) Students will receive no credit for 47A after taking 61A. Self-paced. Prerequisites: 61B or equivalent, 9D, and consent of instructor. Implementation of abstraction, and implementation of abstract data types. (F.S.P) Clancy

47B. Completion of Work in Computer Science 61B. (1) Students will receive no credit for 47B after taking 61B. Self-paced. Prerequisites: A course in data structures, 93 or equivalent, and consent of instructor. Iterators. Hashing, applied to strings and multi-dimensional structures. Heaps. Storage management. Design and implementation of a program containing hundreds of lines of code. Students with sufficient partial credit in 61B may, with consent of instructor, complete the credit in this self-paced course. (F.S.P) Clancy

47C. Completion of Work in Computer Science 61C. (1) Students will receive no credit for 47C after taking 61C. Self-paced. Prerequisites: Programming experience equivalent to that gained in 3 or the Advanced Placement Computer Science A course. Introduction to programming and computer science. This course exposes students to the practical aspects of programming at several levels: (a) within a programming language, using higher-order functions, manifest types, data-directed programming, and message-passing; (b) between programming languages, or translation of code between high-level languages as examples. It also relates these techniques to the practical problems of implementation of languages and algorithms on a von Neumann machine. There are several significant programming projects, programmed in a dialect of the LISP language. (F.S.P) Clancy, Garcia, Harvey

61B. Data Structures. (3) Three hours of lecture, one hour of discussion, four hours of programming laboratory, and an average of one hour of unscheduled programming laboratory per week. Prerequisites: A grade of B or better in 61A or Engineering 77. Fundamental data structures, including linear lists, stacks, queues, trees, sets, and graphs. Arrays and linked structures; array strings, and hash tables. Storage management. Elementary principles of software engineering. Abstract data types. Algorithms for sorting and searching. Inclusion of hardware aspects of computer programming language. (F.S.P) Clancy, Hillig, Yelick

61C. Machine Structures. (3) 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 of computer hardware. Machine architecture, support for high-level languages (logic, arithmetic, instruction sequencing) and operating systems (IO, interrupts, memory management, process switching). Elements of computer logic design. Tradeoffs 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 importance, and programming experience equivalent to that gained in 3 or the Advanced Placement Computer Science A course. Logic, infinity, and induction; applications of recursion and algorithm analysis; asymptotic notation; modular arithmetic and GCDs; applications include primality testing and cryptography. Polynomials; examples include error correcting codes and intractable problems. Probability includes independence, random variables, law of large numbers; examples include load balancing, existence arguments, Bayesian inference. Demmel, Papadimitriou, Russell, Sussman

84. Sophomore Seminar. (1,2) Course may be repeated for credit on an elective basis. 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. Freshman and sophomore seminars are small interactive courses offered by faculty members in departments all across the campus. Sophomore seminars offer opportunity for close intellectual contact between 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.S.P) Staff

99. Individual Study and Research for Undergraduates. (1-2) Course may be repeated for credit. Must be taken on a passed/not passed basis. Prerequisites: GPA of 3.5 or better. A course for lower division students in good standing who wish to undertake a project of individual inquiry initiated jointly by the student and a professor. There are no other formal prerequisites, but the supervising professor must be convinced that the student is able to profit by the program. (F.S.P) Staff

Upper Division Courses

150. Components and Design Techniques for Digital Systems. (3) Three hours of lecture, one hour of discussion, and three hours of laboratory per week. Prerequisites: 61C, Electrical Engineering 40 or 42. Basic building blocks and design methods to construct synchronous digital systems. Alternative representations for digital systems. Bipolar TTL vs. MOS implementation technologies. Standard logic (SSI, MSI) vs. programmable logic (PLD, FPGA). Finite state machine design. Digital computer building blocks as case studies. Introduction to computer-aided design software. Formal hardware laboratories and substantial design experience with computer-aided software. Laboratory work offered throughout the year. (F.S.P) Katz, Newton, Pister


160. User Interface Design and Development. (4) Three hours of lecture and three hours of laboratory per week. Prerequisites: 61A. Programming experience in three 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, tables, etc.), interaction styles and dialog models, design examples, and user-centered design and task analysis. Interface-development methodologies, implementation techniques, testing, and quality assurance. Students will develop a direct-manipulation interface. Landay, Rowe


164. Programming Languages and Compilers. (4) Three hours of lecture and one hour of discussion per week. Prerequisites: 61B and 61C. Survey of programming languages. The design of modern programming languages. Principles and techniques of scanning, parsing, semantic analysis, and code generation. Implementation of compilers, interpreters, and assemblers. Overview of run-time organization and error handling. (F,SP) Aiken, Hillinger, Rowe

169. Software Engineering. (4) Three hours of lecture and one hour of discussion per week. Prerequisites: 61B and 110 or 111. Ideas and techniques for designing, developing, and modifying large software systems. Function-oriented and object-oriented modular design techniques, designing for re-use and maintainability. Specification and documentation. Verification and validation. Cost and quality metrics and estimation. Project team organization and management. Students will work in teams on a substantial programming project. (F,SP) Brewer, Hilfinger, Staff

170. Efficient Algorithms and Intractable Problems. (4) Three hours of lecture and one hour of discussion per week. Prerequisites: 61B, Mathematics 55. Concept and basic techniques in the design and analysis of algorithms; models of computation; lower bounds; algorithms for string search, balanced trees and UNION-FIND algorithm; numerical and algebraic algorithms; combinatorial algorithms. Turing machines, how to count steps, deterministic and nondeterministic Turing machines, NP-completeness. Unsolvable and intractable problems. (F,SP) Sinclair, Papadimitriou, Vazirani

172. Computability and Complexity. (4) Three hours of lecture and one hour of discussion per week. Prerequisites: 61A and 110. Turing machines and RAMs. Undecidable, exponential, and polynomial-time problems. Polynomial-time equivalence of all reasonable models of computation. Nondeterministic Turing machines. NP-completeness; Cook’s theorem, NP-completeness of basic problems. Selected topics in language theory, complexity and randomness. (F,SP) Papadimitriou, Sinclair, Vazirani

174. Combinatorics and Discrete Probability. (4) Three hours of lecture and one hour of discussion per week. Prerequisites: 61B; Cognitive Science 101, Linguistics C105 or Cognitive Science C100, Psychology C120B; or consent of instructor. This is a course in the foundations of computation including: principle of inclusion and exclusion, generating functions, Ramsey theory. Expectation and variance, Chebyshev’s inequality, Chernov bounds. Birthday paradox, computer’s birthday. Search trees and entropy computations, universal hashing, random number generation, random graphs and probabilistic existence bounds. (F,SP) Papadimitriou, Sinclair, Vazirani

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 in the foundations of computation including: principle of inclusion and exclusion, generating functions, Ramsey theory. Expectation and variance, Chebyshev’s inequality, Chernov bounds. Birthday paradox, computer’s birthday. Search trees and entropy computations, universal hashing, random number generation, random graphs and probabilistic existence bounds. (F,SP) Papadimitriou, Sinclair, Vazirani

C191. Quantum Information Science and Technology. (3) Three hours of lecture/discussion per week. Prerequisites: 7A-7B and 207A-207B, and either Physics 7C, Mathematics 55, or Computer Science 170. This multidisciplinary course provides an introduction to fundamental conceptual aspects of quantum mechanics, computational and information 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 pertinent physical realizations from nanoscale science and engineering. Also listed as Physics C191 and Chemistry C191. (F,SP) Cremorne, Vazirani, Whaley

194. Special Topics. (1-4) Course may be repeated for credit. (F,SP) Staff

195. Societal Implications of Computer Technology. (2) Three hours of lecture/discussion per week. Must be taken on a passed/not passed basis. Prerequisites: Major in EECS or CS or consent of instructor. Topics include electronic community; the changing nature of work; and work-related risks including: 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

196. Honors Seminar for Computer Science Majors. (3) Three hours of lecture per week and project work. Must be taken on a passed/not passed basis. Prerequisites: 150, 170, and consent of instructor. Students will do one of several projects in computer science to be chosen by the instructor. Students will assess current literature in the topics and present critiques to the class. Each student will carry out a project. (SP) Staff

198. Directed Group Studies for Advanced Undergraduates. (1-4) Course may be repeated for credit. (F,SP) Staff

219. 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; and work-related risks including: 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 C155.

219. Honors Seminar for Computer Science Majors. (3) Three hours of lecture per week and project work. Must be taken on a passed/not passed basis. Prerequisites: 150, 170, and consent of instructor. Students will do one of several projects in computer science to be chosen by the instructor. Students will assess current literature in the topics and present critiques to the class. Each student will carry out a project. (SP) Staff

231. Artificial Intelligence. (2) Three hours of lecture and one hour of discussion per week. Prerequisites: 61B, 61C, 7A-7B, and either Physics 7C, Mathematics 55, or Computer Science 170. This multidisciplinary course provides an introduction to fundamental conceptual aspects of traditional AI, including computational and information 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 pertinent physical realizations from nanoscale science and engineering. Also listed as Physics C191 and Chemistry C191. (F,SP) Cremorne, Vazirani, Whaley

258. Parallel Processors. (3) Three hours of lecture per week. Prerequisites: 252. In-depth study of the design, engineering, and evaluation of modern parallel computers and systems. Fundamental design: naming, synchronization, latency, and bandwidth. Architectural evolution and technological driving forces. Parallel programming models, communication primitives, programming workloads and methodology for quantitative evaluation. Latency avoidance through replication in small-scale and large-scale shared memory designs; cache-coherence, protocols, directory, and memory consistency models. Message passing: protocols, storage management, and deadlock. Efficient network interface, protocols, and structures, active messages, and co-processing in large-scale designs. Latency tolerance through prefetching, multithreading, dynamic instruction scheduling, and software techniques. Network design: topology, packaging, k-ary n-cubes, performance under contention. Synchronization: global optimizations, mutual exclusion, and events. Alternative architectures: dataflow, SIMD, systolic arrays. (F,SP) Staff

260. User-Interfaces to Computer Systems. (3) Three hours of lecture per week. Prerequisites: 162 and 164 recommended, or consent of instructor. For students majoring in EECS. 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 and display management abstractions. Case

B prefix=language course for business majors
C prefix=cross-listed course
AC suffix=satisfies American cultures requirement
H prefix=honors course
R prefix=course satisfies R&Q requirement
*Professor of the Graduate School
†Recipient of Distinguished Teaching Award
‡Recipient of Distinguished Teaching Award
234 / Electrical Engineering and Computer Sciences

studies of naive-and expert-user interfaces. Students will complete a substantial project. Landay, Rowe

261. Security in Computer Systems. (3) Three hours of lecture per week. Prerequisites: 162. Graduate survey of modern topics in computer security, including protection, access control, distributed access security, firewalls, remote access, safe language, 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: 162 and entrance exam. Formerly 262. Graduate survey of systems for managing computation and information, covering a breadth of topics: early systems; volatile memory management; virtual memory and buffer management; persistent memory systems, including both file systems and transactional storage managers; storage metadata, physical vs. logical naming, schemas, process scheduling, threading and concurrency control; system support for networking, including remote procedure calls, transactional RPC, TCP, and IP; message passing, communication in distributed and mobile systems and APIs; performance analysis and engineering of large software systems. Homework assignments, exam, and term paper or project required. (F,SP) Heiliger

262B. Advanced Topics in Computer Systems. (3) Three hours of lecture per week. Prerequisites: 262A. Continued graduate survey of large-scale systems for managing information and computation. Topics include basic performance measurement; extensibility, with attention to systematic opportunities and constraints of abstractions; datatypes; interface structures, including support for concurrency and recovery; parallelism, including parallel architectures, query processing and scheduling; distributed data management, including distributed and mobile file systems and databases; distributed caching; large-scale data analysis and search. Homework assignments, exam, and term paper or project required. (F,SP) Brewer, Franklin, Heiliger, Joseph

263. Design of Programming Languages. (3) Three hours of lecture 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, object-oriented languages and architectures. Local code improvement. Optimization methods. Code optimization for advanced architectures. Exiting parallel architectures, query processing and scheduling; parallel algorithms and efficient implementations of combinatorial algorithms; analysis of data structures; applications of data structure techniques to sorting, searching, and geometric problems. Papadimitriou, Sinclair, Vazirani


271. Randomness and Computation. (3) Three hours of lecture per week. Prerequisites: 170 and at least one course numbered 270-279. Computational applications of randomness and computational theory of randomness. Approximate counting and uniform generation in combinatorial problems, rapid approximation of random walks on expanders graphs, explicit construction of expander graphs, randomized reductions, Kolmogorov complexity, pseudo-random number generation, semi-random sources. (SP) Kahan


274. Cryptography. (3) Three hours of lecture per week. Prerequisites: 170. Graduate survey of modern topics on theory, foundations, and applications of modern cryptography. One-way functions; pseudorandomness; encryption; authentication; public-key cryptosystems; notions of security. May also cover zero-knowledge proofs, multi-party cryptographic protocols, practical approaches, or other topics, as time permits. (F,SP) Trevisan, Wagner

278. Machine-Based Complexity Theory. (3) Three hours of lecture per week. Prerequisites: 170. Properties of abstract complexity measures; Determinism vs. nondeterminism; complexity and complexity hierarchies; aspects of the P-NP question; relative power of various abstract machines. Vazirani

279. System Support for Scientific Computation. (3) Three hours of lecture per week. Prerequisites: 60B, Engineering 118 or Mathematics 128. Formerly 281T. Trace the consequences of design decisions made by "architects" of hardware, languages and operating systems upon those who use the computer for large-scale numerical computations in business, engineering, and science. Kahn


C281A. Statistical Learning Theory. (3) Three hours of lecture per week. Prerequisites: C281A, Statistics C241A. Recent topics include: kernels, asymptotic performance analysis of symmetric and asymmetric kernels, reproducing kernel Hilbert spaces, approximation properties of these spaces, model selection, and universal consistency. Also listed as Statistics C241B. (SP)

C281B. Advanced Topics in Learning and Decision Making. (3) Three hours of lecture per week. Prerequisites: C281A. Statistical Learning Theory. Recent topics include: gradient flow on the empirical risk, asymptotic performance analysis of reproducing kernel Hilbert spaces, approximation properties of these spaces, model selection, and universal consistency. Also listed as Statistics C241B. (SP)

282. Algebraic Algorithms. (3) Three hours of lecture per week. Prerequisites: 164, Mathematics 113B, or permission of instructor. Theory of symbolic and algebraic computer programs. Polynomial arithmetic, GCD, factorization, integration of elementary functions, analytic approximation, simplification, design of computer systems and languages for symbolic manipulation. Fateman

284. Computer-Aided Geometric Design and Modeling. (3) Three hours of lecture per week. Prerequisites: 164, Mathematics 113B, or permission of instructor. Theory of symbolic and algebraic computer programs. Polynomial arithmetic, GCD, factorization, integration of elementary functions, analytic approximation, simplification, design of computer systems and languages for symbolic manipulation. Fateman

286. Implementation of Data Base Systems. (3) Three hours of lecture per week. Prerequisites: 162 and 186. Implementation of data base systems on modern 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

287. Advanced Robotics. (3) Three hours of lecture per week. Prerequisites: Electrical Engineering 125. Introduction to advanced robotics. The world of robotics: Origins, design, development, and future challenges. Development of AI techniques related to current research in robotics. Planning and control issues for robotic systems, taking into account: dynamic constraints, control and sensing uncertainty, and non-holonomic motion con-

286. Artificial Intelligence Approach to Natural Language. (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, use of logic in programming computers. Predicate calculus, non-monotonic logics, probability and decision theory, and their use in capturing commonsense and expert knowledge. Theorem-provers, planning systems belief networks and influence diagrams as reasoning methods. Integrated architectures for intelligent agents. A project will be undertaken. 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 material on the retina and visual pathways, psychophysical measurements, visual sensation, color vision, spatial and disparity measurement, and the determination of parts-whole structure from optical images. Psychophysics of various cues to shape and spatial layout such as properties from two-dimensional images. Relevant physiology of color, light and dark adaptation, spatial contrast sensitivity, spatial resolution, spatiotemporal contrast sensitivity, motion and disparity measurement. Connections between psychophysics and computer vision. 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, 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 the retina and visual pathways, psychophysical measurements, visual sensation, color vision, spatial and disparity measurement, and the determination of parts-whole structure from optical images. Psychophysics of various cues to shape and spatial layout such as texture, contour, shading, stereopsis, and structure from motion. Relevant 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, Vision Science C290A, and Molecular and Cell Biology C264A.

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 "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 neurosciences. 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. (FSP) 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. Supervised experience in off-campus companies relevant to specific aspects and applications of electrical engineering and/or computer science. Written report required at the end of the semester. (FSP) Aiken

298. Group Studies Seminars, or Group Research. (1-4) Course may be repeated for credit. One to four hours per unit. Sections 1-25 to be graded on a satisfactory/unsatisfactory basis. Advanced study in various subjects through seminars on topics to be selected each year, informal group studies of special problems, group participation in comprehensive design projects, or group research on complete problems for analysis and experimentation. (FSP) Staff

299. Individual Research. (1-12) Course may be repeated for credit. Investigations of problems in computer science. (FSP) Staff

302. Designing Computer Science Education. (2) Two hours of lecture per week. Discussion, practice, and review of research concerning issues relevant to the teaching of computer science. (F,SP) Gertrude C. Buehring, Ph.D.

323. Vision D: High-Level Vision. (2) Three hours of lecture per week for four semesters. Prerequisites: Consent of instructor. The course will cover "higher-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 neurosciences. Also listed as Molecular and Cell Biology C264D, Vision Science C290D, and Psychology C215D.

Upper Division Courses

IDS 100AC. Technology and the American Experience. (3) 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 values of Native Americans and of European Americans before 1700. Technological clashes, transfers, and dialogues between different American cultures. Technology and 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. Spacing departments: Engineering Interdisciplinary Studies and History. This course satisfies the American cultures requirement. (SP)

IDS 110. Introduction to Computers. (4) Three hours of lecture and four hours of laboratory per week. For- merly 110 and 110L. An introduction to computers and digital technology and culture. The conceptual foundations and functions of computer hardware and software and the use of the Internet. Elements of programming for the World Wide Web. Students will complete a substantial programming project related to their academic interests. Students who have completed other "computer science service courses," as described in the 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. (FSP) Staff

Endocrinology

(College of Letters and Science)

Group Office: 3600 Valley Life Sciences Building, (510) 642-5024

† Howard A. Bern, Ph.D., * Professor of the Graduate School

Professors

James W. Fristrom, Ph.D. and S. Timiras, M.D., Ph.D.

Hei Sook Sul, Ph.D.

‡Gary Firestone, Ph.D.

Eric A. Clancy, Garcia, Harvey

†Paulo S. Timiras, M.D., Ph.D.

Prerequisites: Consent of instructor. The course will present basic material on the retina and visual pathways, psychophysical measurements, visual sensation, color vision, spatial and disparity measurement, and the determination of parts-whole structure from optical images. Psychophysics of various cues to shape and spatial layout such as texture, contour, shading, stereopsis, and structure from motion. Relevant 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, Vision Science C290A, and Molecular and Cell Biology C264A.

C293B. Vision: Quantitative, Perceptual, and Physiological Aspects. (3) Three hours of lecture per week for four semesters. Prerequisites: Consent of instructor. The course will cover "higher-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 neurosciences. Specific topics include perception of color, grouping, figure-ground organization, modal and continuous aspects of visual awareness. The approach will be interdisciplinary, covering topics in the teaching of computer science. (F,SP) Stacy K. Clancy, Harvey, Gertrude C. Buehring, Ph.D.

The Graduate Program

B prefix=language course for business majors
C prefix=cross-listed course
AC suffix=satisfies American cultures requirement
H prefix=honors course

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 neuroendocrine, 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 adviser and by the professor who directs their research. The graduate adviser and the major professor will ascertain what science service courses meet the minimum requirements, will recommend to prospective candidates what additional courses to take, will decide with them the fields to be covered in the qualifying examinations, and will act gener-
To advance to candidacy for the Ph.D., students must complete all requirements (information can be obtained from the graduate advisers or at the office given above), including passage of an oral qualifying examination.

Energy and Resources Group
(Special Studies)

Department Office: 310 Barrows Hall, (510) 642-1640 http://socrates.berkeley.edu/erg/
Chair: William Nazarof, Ph.D.

Professors
John Harte, Ph.D. University of Wisconsin. Ecology, climate, biodiversity
Daniel Kammen, Ph.D. University of Chicago. Ecological economics, environmental sustainability, sustainable development
Gene I. Rochlin, Ph.D. University of Chicago. Energy, political economy, social studies of science and technology

Assistant Professors
Alexander E. Farrell, Ph.D. University of Pennsylvania. Energy and environmental economics
Isha Ray, Ph.D. Stanford University. Water, development, environment

Ph.D. Adjunct Professor
Thomas E. McKone, Ph.D. (Public Health)

Associate Professors
Ishangh Anh, Ph.D. (Nuclear Engineering)
Sherwood C. Eaton, Ph.D. (Computer Science, Electrical Engineering, and Computer Sciences)
Galen Cranz, Ph.D. (Architecture)
Carmen E. D'Alessandro, Ph.D. (Civil and Environmental Engineering)
Francesca Grivetti, Ph.D. (Law)
Michael Watts, Ph.D. (Geography)

Michael Watts, Ph.D. (Geography)
Eike Weber, Ph.D. (Materials Science and Engineering)
Sverker Weibull, Ph.D. (Social Science)
Oliver Williamson, Ph.D. (Business Economics, Law)
Brian D. Wright, Ph.D. (Agricultural and Resource Economics)
Johannes Wyss, Ph.D. (Political Science)

Program Overview
The Energy and Resources Group (ERG) is an interdisciplinary academic unit that conducts graduate teaching and research. It treats issues of energy, resources, development, human and biological diversity, and international security at the intersection of technological, economic, environmental, and sociopolitical components. Established in 1973, ERG offers two-year M.A. and M.S. degrees in energy and resources, as well as the Ph.D.

Faculty. The faculty of ERG consists of seven professors of Energy and Resources plus some 100 other affiliated faculty members whose main appointments span all 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 whom are doctoral candidates. The students come from a wide variety of backgrounds—engineering, natural sciences, social 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. All receive training at ERG in the technological, environmental, economic, and sociopolitical dimensions of energy and resource issues while pursuing additional course work and individual research toward their interest and background.

Graduates. ERG graduates are employed across the U.S. and throughout the world in universities, environmental and international agencies, legislative staff positions, national laboratories, public and private utilities, other energy and resource companies, consulting firms, and public-interest organizations.

Undergraduate Courses. The 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. The courses 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 advanced training in interdisciplinary analysis and research. Individual courses review recent developments in the field or emphasize particular disciplinary perspectives: economics, resources, politics, public policy, or environmental sciences.

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: http://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, Sections 3-4 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 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 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.
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 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)

98. Directed Group Study for Lower Division Students. (1-4) Course may be repeated with consent of department. Enrollment is restricted; see the Introduction to Courses and Curricula section of this catalog for more information. Must be taken passed/not passed basis. Lectures and small group 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) Kamen, Farrell

102. Quantitative Aspects of Global Environmental Change. (4) Three hours of lecture and one hour of discussion per week. Prerequisites: Upper division standing; calculus; university-level introductory physics, chemistry, biology, or consent of instructor. Human disturbance of physical and hydrological cycles; causes and consequences of climate change and acid deposition; transport and health impacts of pollutants; loss of species; radioactivity in the environment; epistemological problems in the interpretation of the evidence. (SP) Kostantinou

120. Renewable Resources for Electric Generation. (3) Students will receive no credit for 120 after taking Engineering 162. Three hours of lecture and one hour of discussion per week. Prerequisites: Upper division standing; Physics 7A-7B or 8A-8B or equivalent. Characteristic of electric generating technologies based on renewable resources: hydroelectric, wind, solar thermal, photovoltaic, biomass, geothermal, wave, and tide power. Physical and engineering aspects; the utility perspective; criteria for implementation; cost, reliability, output profile, operating characteristics, modularity, resource availability, environmental impact, utility regulatory issues. (SP) Kamen

121. Automobile. (3) Three hours of lecture and one hour of discussion per week. Four hours of lecture and one hour of discussion per week. Prerequisites: Upper division standing; Physics 7A-7B or 8A-8B or equivalent. Characteristic of generating technologies based on renewable resources: hydroelectric, wind, solar thermal, photovoltaic, biomass, geothermal, wave, and tide power. Physical and engineering aspects; the utility perspective; criteria for implementation; cost, reliability, output profile, operating characteristics, modularity, resource availability, environmental impact, utility regulatory issues. (SP) Kamen

170. Environmental Classics. (3) Three hours of seminar per week. Prerequisites: Upper division standing, Motivation: What is the history and the 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. Must be taken passed/not passed basis. Lectures and small group discussions focusing on topics of interest that vary from semester to semester. (F) Rochlin

180. 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 economic questions about growth, what constitutes the good life, and how economic justice can be assured. But economists continue to use measures and models that simplify these issues and provide limited empirical economics responses to this tension between the desire for simplicity and the multiple perspectives needed to understand complexity in order to move toward sustainable, 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. Cross-disciplinary 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 passed/not passed basis. Prerequisites: Upper division standing, plus particular courses to be specified by 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 passed/not passed basis. Prerequisites: Environmental restriction, regulations and guidelines in General Catalog. Individual conferences. (F,SP) Staff

Graduate Courses

200. Interdisciplinary Energy Analysis. (4) Four hours of lecture per week. Prerequisites: 100, or equivalent and consent of instructor, and graduate standing. Prerequisite: Lower-level treatment of the interacting technological, economic, environmental, and sociopolitical aspects of energy supply and use, including regional, national, and international issues. Emphasizes systematic assessment of alternative strategies and options from an interdisciplinary viewpoint. (F) Kamen, Norgaard

202. 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 climate change on natural systems. Also listed as Environ Sci, Policy, and Management C211 and Integrative Biology C271.

220. Modeling Environmental and Resource Systems. (3) Three hours of lecture per week. Prerequisites: Consent of instructor. 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; optimization theory, and an introduction to a number of statistical techniques. This course will be recommended as a prerequisite for advanced modeling courses in Integrative Biology, Energy and Resources Group, and Environment, Policy, and Management. Also listed as Environ Sci, Policy, and Management C205 and Integrative Biology C205. (F) Staff

225. 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 optoelectronic devices and basic semiconductor device physics. This technical course focuses on the fundamentals of photovoltaic energy conversion with respect to the physical principles of operation and design of efficient semiconductor solar cell devices. This 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,SP) Kamen, Weber

251. The Political Economy of Energy. (3) Three hours of lecture per week. Prerequisites: Some familiarity with present critical energy policy problems and at least a broad general understanding of relevant technologies. The political economy of energy policy, emphasizing the appropriate and actual roles of state and market governments. Emphasis on how and why to apply various theoretical and methodological tools of the social sciences to policy-making in technical issue areas. (SP) Rochlin

254. Electric Power Systems. (3) Three hours of lecture and one and one-half hours of discussion per week. Prerequisites: Senior or graduate standing, calculus helpful. Provides an understanding of concepts in the design and operation of electric power systems, including generation, transmission, and consumption. Course covers basic electromagnetic circuit theory, power, circuit and load analysis, reliability, planning, dispatch, organizational design, regulations, environment, fuel consumption, end-use efficiency, and new technologies. Course a technical and a policy component, including both analytics and modeling, but is not to be limited to engineering students. (F,SP) Farrel

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

B prefix=language course for business majors
C shelf=course satisfies R&C requirement
AC suffix/course satisfies American cultures requirement
P prefix=course satisfies Q course satisfies R&C requirement
*Professor of the Graduate School
†Recipient of Distinguished Teaching Award
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 have influenced politics and policies in the U.S. 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,SP) 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 aspects 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 an investigation/data collection, what we assume explicitly and implicitly, and the ethical dilemmas raised by fieldwork-oriented studies. The course will be broad rather than deep; it is a step toward, and not a substitute for, in-depth courses on interviewing or research methods on current research in energy and resources. Sections are operated independently under the direction of different staff. (F,SP) Staff

299. Individual Research in Energy and Resources. (1-8) 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 graduate student instructor in the Group and permission of the graduate advisor. Course credit for experience gained in academic teaching through employment as a graduate student instructor. (F,SP) Staff

Engineering

(College of Engineering)

Office of the Dean: 320 McGLaughlin Hall, (510) 642-5771
Dean: A. Richard Newton, Ph.D.
Associate Deans:
David M. Auslande, Sc.D. (until June 30, 2005; afterward, to be announced) (Student Affairs)
George Johnson, Ph.D. (Special Programs)
Gary Baldwin, Ph.D. (Industry Relations)
R. Scott Knowles, Ph.D. (Research and Technology)
George Leitham, Ph.D. (International Relations)
Carlo Sequin, Ph.D. (Capital Projects)
Costas Spanos, Ph.D. (Research)
P. Carl Seiber, Ph.D. (Development)
Paul K. Wright, Ph.D. (Distance Learning and Instructional Technology)

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 the bachelor of science and graduate degrees. Each department with its degree programs is listed separately in alphabetical order in this catalog.

- Bioengineering
- Civil and Environmental Engineering
- 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—Double Majors
- Engineering Science
- Engineering—Undeclared
- Management of Technology
- Manufacturing Engineering
- Studies in Engineering, Science, and Mathematics Education (SSEMA)

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, 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). Programs are also offered in bioengineering, manufacturing engineering, and materials science and 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 science with programs in computational engineering science, engineering mathematics and statistics, engineering physics, and environmental engineering science. Entering freshmen may apply for admission to an engineering—undeclared option. The college offers six double 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, double 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 in the fall semester of the senior year. Admission Requirements. Entering freshmen should have completed the following subjects:

- High School Subjects and Number of Years:
  - History/Social Science—2 required
  - English—4 required
  - Mathematics—3 required, 4 recommended
  - Laboratory Science—2 required, 3 recommended
  - Visual and Performing Arts—1
  - Language other than English—2 required, 3 recommended

College preparatory electives—1
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 the Master of Engineering and Doctor of Engineering degree programs emphasizing advanced professional studies of design development. Fields of study include bioengineering, civil and environmental engineering, electrical engineering, computer science, 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, 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 an engineering department.

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 #1762, (510) 642-5883
Chair: Dorian Liepmann, Ph.D.

Civil and Environmental Engineering
Department Office: 760 Davis Hall #1710, (510) 642-2621
Chair: Gregory L. Fenves, Ph.D.

Electrical Engineering and Computer Sciences
Department Office: 231 Cory Hall #1770, (510) 642-3211
Chair: Jitendra Malik, Ph.D.

Computer Science Division
Department Office: 389 Soda Hall #1776, (510) 642-1024
Chair: Jitendra Malik, Ph.D.

Industrial Engineering and Operations Research
Department Office: 4141 Etcheverry Hall #1777, (510) 642-5484
Chair: Lee W. Schruben, Ph.D.

Materials Science and Engineering
Department Office: 210 Hearst Memorial Mining Building #1760, (510) 642-3801
Chair: Fiona M. Doyle, Ph.D.

Mechanical Engineering
Department Office: 6141 Etcheverry Hall #1740, (510) 642-6485
Chair: Albert Pisano, Ph.D.

Nuclear Engineering
Department Office: 4153 Etcheverry Hall #1730, (510) 642-5010
Chair: Per F. Peterson, Ph.D.

Interdisciplinary Studies
Program Office: 230 Bechtel Engineering Center #1708, (510) 642-8790
Associate Dean: David Dornfeld, Ph.D.

Lower Division Courses
11. Principles of Environmental Engineering and Science. (3) Four hours of lecture and discussion per week. Prerequisites: Mathematics 1A-1B, Physics 7A, 7B. Formerly 50. Basic principles of environmental science. Focus on understanding the processes and resources needed by human societies and the resulting environmental effects. The course will cover both the physical and biological processes as they are influenced by human activities. (F,SP)

24. Freshman Seminar. (1) Course may be repeated for credit as topics vary. Two hours of lecture per week. Prerequisites: Upper division standing. Course may be repeated for credit as topics vary. (F,SP)

28. Basic Engineering Design Graphics. (3) Two hours of lecture per week. Prerequisites: Mathematics 1A-1B; Physics 7A. Basic vectorial treatment of the principles of graphic communication and graphical communications tools used by engineers. (F,SP)

36. Engineering Mechanics I (2) Two hours of lecture per week. Prerequisites: Mathematics 1A-1B; Physics 7A. A vectorial 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, stability of equilibrium. Sponsoring Department: Civil and Environmental Engineering. (F,SP)

39. Freshman/Sophomore Seminar. Course may be repeated for credit as topics vary. One hour of seminar per week. Prerequisites: Upper division standing. Course may be repeated for credit as topics vary. (F,SP)

45. Properties of Materials. (3) Three hours of lecture per week. Prerequisites: Mathematics 1A-1B; 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)

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)

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. Formerly 77N. 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. Sponsoring departments: Civil and Environmental Engineering. (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: Upper division standing. Course may be repeated for credit. (F,SP)

210. Introduction to Operations Research. (3) Three hours of lecture and one hour of discussion per week. Prerequisites: Upper division standing. Course may be repeated for credit. (F,SP)

411. Introduction to Networked Applications and Computing. (3) Three hours of lecture per week. Prerequisites: Upper division standing. Course may be repeated for credit. (F,SP)

115. Engineering Thermodynamics. (4) Students will receive no credit for Engineering 115 after taking Mechanical Engineering 105 or Chemical Engineering 114. Four hours of lecture per week. Prerequisites: Physics 7B, Math 54; Chemistry 1B recommended. Study of the fundamental laws of thermodynamics; substance and energy properties; application to flow processes and to nonequilibrium processes; statistical thermodynamics of ideal gases and crystalline solids; chemical and materials thermodynamics; multiphase and multicomponent...
equilibria in reacting systems; electrochemistry. Sponsoring Department: Materials Science and Engineering and Nuclear Engineering. (F) Glaeser, Olan-
der

117. Methods of Engineering Analysis. (3) Three hours of lecture and one hour of discussion per week. Prerequisites: Mathematics 53, 54; Method of theoretical engineering analysis; techniques for analyzing partial differential equations and the use of special functions related to engineering systems. Sponsoring Department: Mechanical Engineering. (F) Staff

119. Applied Java Programming. (3) Three hours of lecture and one hour of discussion per week. Prerequisites: Mathematics 53; 54; consent of instructor. This course provides a concise introduction to object-oriented programming and the basics of Java programming. Advanced features of Java programming, including graphical user interface design with Swing, multithreading, distributed objects, remote method invocation, and linking applications or applets to native methods in C, are also covered. The course coverage and assignments emphasize programming tools and computational methods that can be used for engineering analysis, intelligent manufacturing and other types of system modeling or data analysis. The final three weeks of the course will examine examples and case studies that illustrate application of Java programming to engineering design analysis, intelligent manufacturing processes, simulation and/or other application areas. (SP) Carey

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 of evaluation of alternatives. Minimum-cost life and replacement analysis and tax implications. Risk, opportunity, and certainty; 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) Two 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 are emerging as a result. These new issues are arising in areas such as artificial intelligence, information technology, nanotechnology, and nuclear technology. The nature of these issues, their ethical, legal, and social ramifications, and what our society can do in reaction to these issues will be discus-
sed. Philosophy, religion, and the natural and social sciences will be explored in relation to these is-
ues. (SP) Hauser-Kastenberg, Kastenberg


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. Mathematics 53, 54. Methods of credit in an upper division engineering course may complete the work un-
der this heading. (FSP) Staff

C164. Marine Statics and Structures. (3) Students will receive 2 units of credit for 164 after taking Me-
chanical Engineering 151. Three hours of lecture per week. Prerequisites: 130B or consent of in-
tuctor. Formerly 164. Terminology and definition of hull forms, conditions of static equilibrium and sta-
bility of floating submerged bodies. Effects of damage on stability. Structural loads and response. Box girder
theory. Isotropic and orthotropic plate bending and bucking. Also listed as Mechanical Engineering C164. (F) Mansour

170A-170B. Introduction to Modeling and Simula-
tion I, II, (2,2) Two hours of lecture per week. Prerequi-
sites: 77, Mathematics 53, 54; junior/senior standing. Techniques of mathematical modeling and computer simulation, using projects drawn from multidisciplinary areas of computational en-
gineering science. Areas covered span biology, chem-
istry, applied math/physics, and engineering. Models progress sequentially through problem statement, mathematical model, approximations and analytic so-
lution, discrete model, object-oriented model, imple-
mentation and simulation, visualization, comparison to data, analysis, and observation. (F,SP) Ver-
boncoeur

177. Advanced Programming with MATLAB. (3) Three hours of lecture and one voluntary discussion/computer laboratory per week. Prerequisites: 77; Mathematics 53, 54 (one of these may be taken con-
currently); or consent of instructor. The course builds an understanding, demonstrates engineering uses, and provides hand-on experience for object-oriented programming as well as exposes a practical knowl-
edge of advanced features available in MATLAB. The course will begin with a brief review of basic MATLAB features and quickly move to class organization and function. The instructor will be reinforced by examining the advanced graphical features of MAT-
LAB. The material will also include the effective use of programs written in C and FORTRAN, and will cover SIMULINK, a MATLAB toolbox providing for an ef-
fective ways of model simulations. Throughout the course, the emphasis will be placed on examples and homework assignments from engineering disciplines. (SP) Prenklnach, Palma

180A-180B. Computational Engineering Science Modeling and Simulation I,II, (4,4) Four hours of lec-
ture per week. Prerequisites: Senior/graduate stand-
ing in engineering or applied sciences, 77, Math-
ematics 128A-128B, 170A-170B recommended. 180A must be taken prior to 180B. The core course se-
quence focuses on the concepts of computational modeling and simulation. Concepts are illustrated with projects drawn from the multidisciplinary areas of com-
putationaengineering science. Areas covered: spin ba-
obility, chemistry, applied mathematics, and physics, as well as all areas of engineering. Models will progress sequentially through problem statement, mathematics, symbolic manipulation, optimization, discrete/continuous, approximation, discretization, discrete model, object-oriented model, implementation and sim-
ulation, visualization, and comparison to analysis, ex-
perimentation 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, mod-
eling, 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 equiv-
alent course; upper division standing. Principles of technical communication: analyzing one’s 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. Practice in oral presentations to technical and nontechnical audiences. Sponsoring Department: En-
gineering Interdisciplinary Studies. (F,SP) Staff

191. Engineering Ethics. (3) Three hours of lecture and one discussion section per week. Prerequisites: Upper division standing in an engineering or science course. Prerequisites: Philosophy 191A. His-
torical, regional, and cultural perspectives on ethics. The ethics of issues associated with modern technol-
ogy and the effect of technology on social, cultural, and economic systems. Environmental impact of engi-
neering activities. The role of the engineer in control-
ing technology uses. Ethical and legal responsibilities of the engineering professional. Engineering codes of ethical conduct. Avoiding ethical conflicts in the work-
place. (F,SP) Udell

192. Writing for the Technical Press. (3) Three hours of lecture/discussion per week. Prerequisites: English 1A or equivalent course; upper division standing; consent of instructor. Introduction to writing about tech-
ology, engineering, and science for technical, trade, consumer, and news magazines. Topics include writ-
ing, including report writing, and editing skills; how to improve writing skills; the ethics of technical writing; journalistic ethics, and the structure of the magazine publishing business. Students will research and com-
pose several articles in technical areas of their choice, participate in editorial-style meetings, and analyze/edit each other’s work. (F) Staff

193. California Engineer. (1) Course may be re-
peated once for credit. Three hours of laboratory per week. Must be taken on a passed/not passed basis. Work on the California Engineer Magazine; in one or more of the following capacities: read candidate arti-
cles, edit articles, enter articles into UNIX computer system for typesetting, draw technical illustrations, pho-
tography, issue layout, issue paste-up, write articles on assignment, accounting, advertising sales, public re-
lations. Sponsoring Department: Electrical Engineer-
ing and Computer Science. (F,SP) Staff

195. Science, Technology, and Culture. (3) Three hours of lecture/discussion per week. Prerequisites: English 1A or equivalent course; upper division standing; consent of instructor. This course is designed (1) to encourage students to see science and technology in a broad cul-
tural context; and from a variety of perspectives (histo-
rical, philosophical, ethical, etc.) and (2) to help them develop their writing skills. Science and its ways of knowing; science, technology, and community; sci-
ence, technology and the conscience; technology and the environment; the two cultures. Sponsoring de-
partment: Engineering Interdisciplinary Studies. (SP) Staff

198. Directed Group Studies for Advanced Under-
graduates. (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: Upper division standing, plus particular courses to be specified by instructor. Group study of selected topics. (F,SP) Staff

Graduate Courses

201. Ocean Engineering Seminar. (2,3) Two hours of lecture, two hours of laboratory and one two-hour dis-
section per week. Prerequisites: Enrollment in Ocean Engineering Master of Engineering Program or con-
sent of instructor. Lectures on new developments in oceanic engineering. The optional third unit cov-
ers the analysis and design of artctic 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, determination of global and local forces, and other ice actions on structures. Term pa-
per required. Sponsoring department: Engineering In-
terdisciplinary Studies. (SP) Staff

C219. Diffusion: History, Physics, and Mathematic-
ics. (3) Three hours of lecture per week. Prerequisites: Graduate standing in the sciences or engineering; con-
sent of instructor. Formerly C200. Fourier’s heat-dif-
fusion equation as a basis for studying diverse physical, biological, geological, and social systems. Basic con-
cepts and equations of diffusion, observational justification and solution methods. Evolution of ideas related to renewal, geometric and potential of historical significance. Heat, chemical, solid, and gas diffusion, flow in porous media, and stochastic differential equations. Students will explore their individual interests in diffusion (experimental, theoretical, or historical) to transform a broad context. Also listed as Materials Science and Engineering C219, (SP) Narasimhan

220A. Engineering Analysis. (3) Three hours of lec-
ture and one hour of discussion per week. Prerequi-
sites: Graduate standing; Mathematics 53, 54. Laplace transforms. Fourier series and integrals. Classification


231. Mathematical Methods in Engineering. (3) Three hours of lecture per week. Prerequisites: Math 1A, 1B, 53 and 54 or equivalent. This course offers an integrated treatment of three topics essential to modern engineering: linear algebra, 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 expected that students will have a working knowledge of the calculus. (F,SP) Staff

232. Fundamentals of Multiphase Flow in Earth Systems. (3) Three hours of lecture per week. Prerequisites: Graduate standing; Mathematics 53, 54, or 230A; Chemical Engineering 140 or equivalent. Formerly Mineral Engineering 251. Fundamental physics and mathematics of multiphase, nonisothermal flow of immiscible fluids in porous media. Pore level characterization of porous media; pore networks; invasion percolation in drainage and imbibition; description of capillary pressures and relative permeabilities in two and three phase flow; upscaling; method of coherency in three phase flow; nonisothermal flow with phase change. MATLAB used as the computing environment for assignments and projects. Sponsoring Department: Civil and Environmental Engineering. (F) Patzek

241. Mathematical and Numerical Methods in Earth Sciences. (4) Three hours of lecture and one hour of computer laboratory per week. Prerequisites: Graduate standing; Mathematics 53, 54, or equivalent. Course offers an introduction to fundamental numerical techniques and algorithms for solving ordinary and partial differential equations. A working knowledge of linear algebra is strongly recommended. (F) Staff

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 finite difference methods to current problems of fluid dynamics, including compressible and incompressible flow. Sponsoring department: Mechanical Engineering. (F) Marcus

266B. Spectral Methods for Fluid Dynamics. (4) 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 spectral methods to current problems of fluid dynamics, including compressible and incompressible flow. Sponsoring department: Mechanical Engineering. (F) Marcus

C202. Charged Particle Beam 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 beams, and the applications of 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 C282F. (F) Leung, Steier

C282L. Charged Particle Beam Instrumentation Laboratory. (1) Three hours of laboratory/discussion per week. Prerequisites: Graduate standing or consent of instructor. Must be taken concurrently with C282 or Nuclear Engineering C282L. Optional laboratory designed to accompany Nuclear Engineering C282 and Engineering C282F. Ion and electron source operation and beam formation will be demonstrated experimentally. Laboratory sessions will be held at Lawrence Berkeley National Laboratory. Also listed as Nuclear Engineering C282LF. (F) Leung, Steier

298A. Group Studies or Seminars. (1-6) Course may be repeated for credit. Variable. Must be taken on a satisfactory/unsatisfactory basis. Advanced group studies or seminars in subjects which are interdisciplinary and the humanities are coordinated through the Meakin Interdisciplinary Studies Center. 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 Grad-

prefix=language course for business majors
prefix=cross-listed course
prefix=honors course
prefix=course satisfies R&C requirement
suffix=course satisfies American cultures requirement
*Professor of the Graduate School
†Recipient of Distinguished Teaching Award
The academic program of the CET will initially offer an undergraduate certificate program (pending approval). The program will be administered through the College of Engineering’s Meakin Interdisciplinary Studies Center. Details about this new program can be found at http://www.coe.berkeley.edu/ids/.

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
C111. Introduction to Networked Applications and Computing
124. Ethics and the Impact of Technology on Society
170A-170B. Introduction to Modeling and Simulation I/II
180-180B. 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 (http://mot.berkeley.edu) for further course listings and relevant details about the certificate program.

The center also sponsors the following Interdepartmental Studies (IDS) courses:

1. Technology and Society
100AC. Technology and the American Experience
110. Introduction to Computers
140. Technical Communication for Non-Native Speakers of English

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)

Programs for the Bachelor’s Degree
Each undergraduate Engineering Science curriculum is multidisciplinary and interdisciplinary. The programs 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 in engineering or 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 assigned to a 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 for attacking complex scientific and engineering problems. Combined with mathematical modeling and experimental observations, scientific computation enables engineers and scientists to solve problems that are 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 laboratories.

Lower Division.
Mathematics 1A-1B, 53, 54, or Statistics 134A or Math 110 or Computer Science 70; Physics 7A-7B; Chemistry 1A; three units of science electives from the approved list; Engineering 39B, 77; Computer Science 61B; humanities and social studies electives. For further details, see the Announcement of the College of Engineering.

Upper Division.
Mathematics 128A, 128B; Engineering 170A, 170B, 180A, 190; computational project course from an approved list; core and cluster courses (four each); humanities and social studies electives. For details, 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 eligible courses. Two of these must fulfill the College of Engineering Reading and Composition requirement. Refer to www.coe.berkeley.edu/current_students/hsreq.html for details or go to 308 McLaughlin Hall for a handout.

Engineering Mathematics and Statistics
This interdisciplinary program offers students an opportunity to study pure and applied mathematics as essential components of modern engineering.
The balance between pure mathematics, applied mathematics, statistics, and engineering allows the student to individualize a program of study in theory or applications or both. The program provides a broad foundation for graduate studies in theoretical branches of engineering, research, and physical sciences; as well as in mathematics.

Lower Division. Mathematics 1A-1B, 53, 54; Physics 7A-7B; Chemistry 1A; two lower division computer science courses approved by an adviser; humanities and social studies electives. For details, see the Announcement of the College of Engineering.

Upper Division. Mathematics 110, 128A, 104, and 105 or 185; Statistics 101 or 134; electives, which must include at least four upper division courses in mathematics or statistics.

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.html for details or go to 308 McLaughlin Hall for a handout.

Engineering Physics

This program interweaves the fundamentals of classical physics, chemistry, and mathematics with engineering applications. A great strength of the program is its flexibility. The firm base in physics and mathematics is augmented with engineering courses, further details 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 enables 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; Chemistry 1A-1B; two lower division computer science courses approved by an adviser; humanities and social studies electives; 6 units of technical electives. For details, see the Announcement of the College of Engineering.

Upper Division. Mathematics 104 and 185 or 12A-12B; Physics 110A-110B or Electrical Engineering 117 and 119, Physics 137A-137B; Mechanical Engineering 104 or Physics 105; Nuclear Engineering 104A or Physics 111; Physics 112 or Electrical Engineering 114A; Mechanical Engineering 114; Mechanical Engineering 106 or 185; 14 units of upper division courses in the Department of Physics; 16 units of upper division engineering courses.

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.html for details or go to 308 McLaughlin Hall for a handout.

Environmental Engineering Science

This is a multidisciplinary field requiring an integrative approach that combines the principles of chemistry, biological, and environmental sciences with engineering analysis for environmental protection and restoration. The program incorporates courses from many departments on campus to provide a comprehensive program that is rigorously based in science and engineering, while addressing a wide variety of environmental issues. Although environmental engineering undergraduate options exist in the environmental sciences, students interested in this field may choose to major in one of the engineering and engineering departments, the engineering science curriculum provides a broader-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 and 1B or 3A; Engineering 77; Physics 7A-7B; Biology 1B; Engineering 11, 36; two basic science electives from approved list (Physics 7C, Chemistry 3B, or Mathematics 115, 116, 128A or Statistics 134 and Statistics 135 or Engineering 117, Engineering 170A and Engineering 17), Chemical Engineering 101 or Civil Engineering 173 or Mechanical Engineering 162 or Materials Science and Engineering 176 or EPS 105, ESPM/EPSc 129 or EPS 185; the advanced science sequence; and the engineering science skills cluster as outlined in the Announcement of the College of Engineering.

Upper Division. Civil Engineering 100 or Mechanical Engineering 106 or Chemical Engineering 150A; Civil Engineering 104, Chemical Engineering 104; Chemical Engineering 141 or Engineering 115 or Mechanical Engineering 105 or Mechanical Engineering C105B; Civil Engineering 111; Mathematics 121A-121B or Mathematics 121A-121B or Mathematics 128A or Statistics 134 and Statistics 135 or Engineering 117, Engineering 170A and Engineering 17, Civil Engineering 101 or Civil Engineering 173 or Mechanical Engineering 162 or Materials Science and Engineering 176 or EPS 105, ESPM/EPSc 129 or EPS 185; 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/hssreq.html for details or go to 308 McLaughlin Hall for a handout.

General Degree Requirements

All engineering science programs must include six courses of at least 3 units each in humanities and social studies selected from an approved list of courses. Of these, at least one course must be an English composition course taken from the current approved college list (List E), one must be from a list of selected courses in History and Cultures, one must be from a list of selected courses in Western Literature and Values, and two must be upper division courses. The English composition course and either the course in History and Cultures or that in Literature and Values must be taken for a letter grade. A minimum of two courses, at least one of which is in the upper division, must be taken from a single department.

All engineering science programs also must include at least two technical subjects (mathematics, statistics, science, engineering), of which at least 16 units are upper division engineering courses (required upper division courses may be included here). See the Announcement of the College of Engineering.

Engineering Undeclared

(College of Engineering)

Program Office: 230 Bechtel Engineering Center, (510) 642-8790
Associate Dean: David Dornfeld, Ph.D., dornfeld@me.berkeley.edu

This lower division program is intended for academically strong students who are interested in pursuing an engineering education but who are not yet ready to choose a specialization within easy-to-change engineering or science programs. The undeclared option supplements the freshman-sophomore curriculum with seminars and attractor courses (courses designed to attract students to the major), and introduces the student to the major concepts of various engineering fields. Before their junior year, students must transfer 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 science, 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 1A; two lower division computer science courses approved by an adviser; Physics 7A-7B; Engineering 92; Humanities and Social Studies electives; attractor course; technical electives. Humanities and 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.html for details or go to 308 McLaughlin Hall for a handout. Please consult the Announcement of the College of Engineering for the latest information on this program.

English

(College of Letters and Science)

Undergraduate Office: 322 Wheeler Hall, (510) 642-3467
Graduate Office: 319 Wheeler Hall, (510) 642-4005
http://english.berkeley.edu

Professors
†Elizabeth F. Abel, Ph.D., Princeton University, Modern fiction
†Janet Adelman, Ph.D., Yale University, Shakespeare, English Renaissance literature
Charles F. Altieri, Ph.D., University of North Carolina, 20th-century literature, literary history, history of ideas
John Ahern, Ph.D., Stanford University, English Renaissance, Ann Banfield, Ph.D., University of Wisconsin, Literary and linguistic theory, the novel
Michael A. Bernstein, Ph.D., Philadelphia University, 19th-century poetics, literary theory, comparative culture
†Stephen Booth, Ph.D., Harvard University, Aesthetics, Renaissance literature
Michel R. Breitwieser, Ph.D., SUNY Buffalo, Postwar British literature
Ian Duncan, Ph.D., Yale University, The novel, British literature of 1750-1950, Scottish literature
Mary Catherine Gallagher, Ph.D., University of California, Berkeley, 19th-century British literature, British novels, Victorian nonfiction prose, British women’s literature
Robert Hass, Ph.D., Stanford University, Poetry, poetry criticism
Lyn Hejinian, B.A., Harvard University, Poetry writing, modernist and postmodern literature, American literature
Nicholas Howe, Ph.D., Yale University, Medieval literature, history of the English language, place writing
Lorna Hutson, Ph.D., Oxford University, 17th-century Renaissance literature, drama
Abdul Alim, Ph.D., Howard University, Third World literature in English, African American fiction, colonial literature and critical theory
Victoria Kaita, Ph.D., Yale University, 17th-century literature, especially Milton
†John Knapton, Ph.D., University of California, Berkeley, English Renaissance
Roe Lawton, Ph.D., Harvard University, Poetry, fiction, American literature
Donald A. McGuade, Ph.D., Rutgers University, 20th-century American literature and culture, theory and practice of nonfiction, literature and popular culture
Anne Middleton, Ph.D., Harvard University, Old and Middle English literature
D. Miller, Ph.D., Yale University, 19th-century British literature
Bharati Mukherjee, Ph.D., University of Iowa, Fiction writing, comparative literature
Carolyn Porter, Ph.D., Rice University, American literature, American intellectual history
Jose Saldivar, Ph.D., Stanford University, 19th- and 20th-century literature, social literature
George A. Starr, Ph.D., Princeton University, The novel, English literature, English literature
James Turner, D.Phil., Oxford University, 17th- and 18th-century English and French literature, sexuality, gender, and literature
†Paul J. Aippers, Ph.D., (Emeritus)
Robert Bloom, Ph.D., (Emeritus)
Carol Christ, Ph.D., (Emeritus)
John S. Coolidge, Ph.D., (Emeritus)
Frederick C. Crews, Ph.D., (Emeritus)
Richard Feingold, Ph.D., (Emeritus)
†Donald M. Friedman, Ph.D., (Emeritus)
Charles Muscoglie, Ph.D., (Emeritus)
Alan Nelson, Ph.D., (Emeritus)
D. Niles, Ph.D., (Emeritus)
Raymond Oliver, Ph.D., (Emeritus)
†Professor of the Graduate School
†Recipient of Distinguished Teaching Award
The Department offers courses in literature, language, and writing. Our courses in literature have many different focuses: major authors, historical periods, genres, critical theories and methods, and 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.

The major in English is designed to introduce students to the history of literature written in English, to acquaint them with a variety of historical periods and geographical and cultural regions of English language and literature, to create an awareness of the many different methods of historical periods and geographical and cultural regions of English language and literature, to create an awareness of the many different methods and theories of literary and cultural analysis, and to provide continued training in critical writing. Before declaring the major, students normally must complete English 100 and Composition requirement of the college.

The core of the major consists of seven courses: English 45A-45B-45C, a course in Shakespeare, an upper division course in literature before 1800, and two upper division seminars, English 100 and 150. This required reading inventory of literature in English from Chaucer through the 20th century, including British, American, and Anglophone writing. Together with the required course in Shakespeare, this sequence provides a foundation on which to build more specialized upper division course work 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: English 24, 31AC, 39, 84, 100, 102, 133T, 135AC, C136, 137T, 138, 139, 150, 152, 165, 166, 170, 171, 172, 173, 174, 176, 177, 180N, 180R, 180Z, 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 on the web (http://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, listed in the official description of the major, available at the department office) plus one of the following Shakespeare courses: English 17, 117A, 117B, 117J, or 117S. One upper division course in British, 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 120A; this requirement may not be fulfilled by English 100, 110, or any Shakespeare course. (Note: Certain designated sections of English 150 can be used to satisfy this 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 these two major requirements:

English 150

II. Upper Division Courses. Of the 12 courses required for the major, at least seven must be upper division.

A. Seminars. Two upper division seminars—English 100 (Junior Seminar) and 150 (Senior Seminar)—are required and must be taken for a letter grade only. For the major, at least seven courses will be completed at UC Berkeley departments.

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 for the major. The request for course approval should be grounded in a compelling intellectual rationale, one that explains how the student’s course will contribute to the major. For the English major, students are encouraged to take a course in a different department. For appropriate courses outside English, contact 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 course work from other UC Berkeley departments.

B. Areas of Concentration. The department strongly recommends that at least three upper division courses fall within the areas of concentration outlined below or within an area 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. Please note that most courses, including English 100 and 150, fall within more than one area. Some students may wish to designate one upper division course from another department as belonging to the area of concentration. This judgment should be made in consultation with a major adviser. The area of concentration is not a requirement for the major, but a recommended way of organizing upper division course work.

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/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 second semester each student will write an
honors thesis of 40-60 pages. 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 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 can be counted toward fulfilling the 12-course major requirements.

Education Abroad Programs. Credit toward the major for course work completed through an education abroad program is determined by a major adviser on a case-by-case basis. Students should submit a statement of the English Department’s “Announcement of Classes,” available at pre-enrollment.

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 acquired, upon completion of this program. Students in language classes must inform the English Department in Advance of their intention to receive internship credit.

Additional Information. Further details about the major are available at the department office.

Visit Us on the Web. 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 http://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, three of the five courses must fall within one of the Areas of Concentration listed 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 letter-graded courses, of which at least three must be taken at Berkeley. Courses may 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 Sixteenth Century (British); Seventeenth through Eighteenth Century (British and/or American); Nineteenth Century (British, American, and/or Anglophone); Twentieth 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 foreign language requirement must be met, through course work or examination, by demonstrating advanced knowledge in one, or proficiency in two, approved language(s). The Ph.D. program includes passing a two-hour oral examination, a prospectus conference, and a written dissertation. The normative time for completing the doctoral program is six years.

Prospective students are urged to undertake substantial course work 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 count a passed/not passed basis only. Students will find information about the grading basis of a specific class in these series 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: Passing grade in Subject A (exam or course). R1A or equivalent course required for 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.

43B. Introduction to the Writing of Verse. (4) Three hours of lecture per week. Prerequisites: Consent of instructor.

500. Freshman and Sophomore Studies. (4) Three hours of lecture per week. Prerequisites: R1A or equivalent. Writing-intensive introduction to the study of literature; fulfills the second half of Reading 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 English Department’s “Announcement of Classes” for current offerings well before the beginning of the semester. Sections limited to 17 students.

Upper Division Courses

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 field.

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.

143D. Expository and Critical Writing. (4) Course may be repeated for credit. Three hours of lecture per week. Prerequisites: Consent of instructor. A seminar in expository and critical writing.

145E. 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. A seminar in translating foreign poetry. 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 to study those forms of self-representation that defy disciplinary boundaries, or what we call “visual autobiography.” The course aims to help students become competent writers of the autobiographical text of the current moment (reading and writing) and visual autobiography (sourcing and making) in order to develop a third distinctive textual/visual literacy. Also listed as Visual Studies C185A, Undergraduate Studies C143T, and American Studies C174. This course satisfies the American cultures requirement.

Courses in Language

Note: In addition to the courses listed below, see also 102, 179, 200, 201A, 201B, 202A, 202B, 220, 220A-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), se-
101. The History of the English Language. (4) Three hours of lecture per week. The history of the English language, beginning with the Old English roots, through its Old, Middle, and Early Modern periods, as preserved in the literary heritage, to its different forms in use throughout 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. (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. The Berkeley Seminar Program has been designed to provide yet another opportunity for students 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.

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 a play. Designed primarily for students whose major is not English, but majors and prospective majors are welcome.

31AC. Literature of African Cultures. (4) Course may be repeated for credit with different topic. Three hours of lecture per week. An introduction to the ethnic diversity of African literature. The course will take substantial account of the literature of three or more of the following groups: African Americans, Native Americans, Asian Americans, Chicanos/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.

33. African American Literature and Culture. (4) Three hours of lecture per week. Major literary and cultural texts from the African American tradition from origins to the present.

37. Chicana/o Literature and Culture. (4) Literature in English from the mid-19th through the 20th century. Students each.)

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 from the late-17th through the mid-19th century. B: Literature in English from the mid-19th through the 20th century. C: 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 C77A and C77B. Lecture period: 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 relationship to nature has been imagined in literary and philosophical traditions; and examines how tools of scientific and literary analysis, scientific method, and imaginative thinking can clarify what is at stake in environmental issues and environmental citizenship. Also listed as Undergraduate Interdisciplinary Studies C12 and Envir Sci, Policy, and Management C12.

84. Sophomore Seminar. (1,2) Course may be repeated for credit as topic varies. One hour of lecture per week. Lectures on Shakespeare and reading of his best works. Three 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 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.

95. Other Voices: Multicultural Literary Perspectives. (2) 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 introduce students to the literary study currently being undertaken by English Department faculty interested in issues 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 racial concerns. Upper division English majors will lead discussion groups focusing upon the novel’s methods of literary and oral 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. Designed for English majors. 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.

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 eighteenth-century British literature.

121. Romantic Period. (4) Three hours of lecture per week. Blake, Wordsworth, Coleridge, Byron, Shelley, Keats, and contemporaries.

122. Victorian Period. (4) Three hours of lecture per week. Literature 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.

125D. The 20th-Century Novel. (4) Three hours of lecture per week. Lectures on and discussion of major novels of the twentieth century.

125E. The Contemporary Novel. (4) Three hours of lecture per week. Important contemporary novels, some of which may be read in translation.

Three hours of lecture per week. British and American poetry: 1900 to the present.

102. Modern Drama. (4) Three hours of lecture per week. British and American drama: 1860 to the present.

103. American Literature: Before 1800. (4) Three hours of lecture per week. Lectures on and discussion of the major writers of the early American period.


108. African American Literature and Culture Before 1917. (4) Three hours of lecture per week. Major literary texts in the African American tradition from origins through World War I.

109. 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 twentieth century.

111. 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.

112. Contemporary Literature. (4) Three hours of lectures per week. Lectures on and discussion of selected works written since the Second World War.

113AC. Literature of American Cultures. (4) Course may be repeated for credit with different topic. Three hours of lecture per week. Study of the ethnic diversity of American literature. The course will take substantial account 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 course.

114. Special Topics. (4) Course may be repeated for credit with different topic. 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.

115. Special Topics. (4) Course may be repeated for credit with different topic. 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.

116AC. Special Topics in American Cultures. (4) Course may be repeated for credit with different topic. Three hours of lecture per week. Study of a special topic related to the diversity of the United States. Topics vary from semester to semester. Students should consult the department’s “Announcement of Classes” for offerings well before the beginning of the semester.

117. Literature and Sexual Identity. (4) Course may be repeated for credit with different topic. Three hours of lecture per week. Study of topics related to gender, race, and other social identities. Course may range broadly over Western literature or concentrate on one historical period.

118. Literature and Psychology. (4) Course may be repeated for credit with different topic. Three hours of lecture per week. Study in the relationship of literature to psychology.

119. Language and Language of Films. (4) Course may be repeated for credit with different topic. Three hours of lecture per week plus film viewing. Studies in film as a mode of representing reality; cinematic techniques and the “language” of film. Lectures, class discussions, and film viewings.

120. Language and Philosophy. (4) Course may be repeated for credit with different topic. Three hours of lecture per week. Study of the relationship of language to philosophy.
Graduate Courses

200. Problems in the Study of Literature. (4) Three hours of lecture per week. Prerequisites: Open only to students in the English Ph.D. program. Approaches to literary study, including textual analysis, scholarly methodology and bibliography, critical theory and practice.

201A. Topics in the Structure of the English Language. (4) Course may be repeated for credit as topic varies. Three hours of lecture per week.

201B. Topics in the History of the English Language. (4) Course may be repeated for credit as topic varies. Three hours of lecture per week.

202. History of Literary Criticism. (4) Three hours of lecture per week.

203. Graduate Readings. (4) Course may be repeated for credit. Three hours of lecture per week. Prerequisites: Open to advanced undergraduates, with the consent of the instructor. Graduate lecture courses surveying broad areas and periods of literary history, and directing students in wide reading. Offerings vary from semester to semester. Students should consult the department’s “Announcement of Classes” for offerings well before the beginning of the semester.

205A-205B. Old English. (4) Three hours of lecture per week. Prerequisites: Open to undergraduates with the consent of the instructor.

211. Chaucer. (4) Course may be repeated for credit. Three hours of lecture per week. Prerequisites: Pre-enrollment interviews required. Tutoring Berkeley undergraduates in College Writing R1A, R1B, and other writing and/or literature courses. Seminar topics: the writing process, responding to writing, composition theory, grammar, collaborative learning, tutoring methods. Tutors keep a weekly journal, read assigned articles, videotape their tutoring, and write a final paper. This course cannot be used toward fulfillment of the major requirements.

212. Readings in Middle English. (4) Course may be repeated for credit. Meetings to be arranged. 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 of not less than 2.5. 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.

217. Shakespeare. (4) Course may be repeated for credit. Three hours of lecture per week. Prerequisites: Consent of instructor, normally based on prior writings submitted. A writing workshop in fiction for graduate students.

243B. Poetry Writing Workshop. (4) Course may be repeated for credit. Three hours of lecture per week. Prerequisites: Consent of instructor, normally based on prior writings submitted. A writing workshop in poetry for graduate students.

246C. Renaissance: Sixteenth century (excluding, or at least not prominently featuring, Shakespeare). (4)

246D. Renaissance: Seventeenth century through Milton. (4)

246E. Restoration and early 18th century. (4)

246F. Later 18th century. (4)

246G. Romantic. (4)

246H. Victorian. (4)

246I. American to 1855. (4)

246J. American 1855 to 1900. (4)

246K. Literature in English 1900 to 1945. (4)

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. Offerings vary from semester to semester. Students should consult the department’s “Announcement of Classes” for offerings well before the beginning of the semester.

298. Special Studies. (1-12) 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. Primarily for students engaged in 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 credit in the English Ph.D. 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 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 doctoral degree.

Environmental Design

(College of Environmental Design)

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 educational base and professional competency in environmental design fields. In addition, they serve as undergraduate preparation for graduate education both in the design fields and, with proper selection, in other fields such as 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 degree of conformity with established educational standards. Master’s degree programs may consist of a pre-professional 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 options 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, for preparation for either continued education in a pre-professional 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). Students who complete the major may pursue graduate studies in urban 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, one year of physics, and one year of biology or other natural
eral science. Additional preparation could include hand drawing or introductory drafting. Transfer applicants who have completed 60 semester units should have completed the prerequisite course work described in the Announcement of the College of Environmental Design. As transfer admissions become increasingly competitive, the college consistently retains those applications that demonstrate the most complete academic preparation (i.e., prerequisite courses either lacking or in progress) and 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, Califor- nia community college transfer students may receive up to 70 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 minor 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 General Catalog. The College of Environmental Design, available from the Undergraduate Dean’s Office, University of California, Berkeley, 232 Wurster Hall #1800, Berkeley, CA 94720-1800, contains complete information on this and other degree programs.

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 course work taken outside the major, and to give recognition to the work when it is completed. The following minors are currently being offered to all majors: city and regional planning, ecological design, environmental design in developing countries, history of the built environment, landscape architecture, and social and cultural factors in environmental design. The architecture minor is open to architecture and civil engineering majors only. The landscape architecture minor is open to architecture majors only. For further information, contact the Undergraduate Office, 232 Wurster Hall.

Information on the courses and degree programs in architecture, city and regional planning, environmental design, and landscape architecture can be found in the appropriate sections of this catalog, as well as in the Announcement of the College of Environmental Design.

Graduate Programs

Architecture, City and Regional Planning, and Landscape Architecture Each offer accredited professional master’s degree programs that serve as the basic credential for professional practice in the respective fields. The departments also have concentration joint degree programs that combine professional degrees in two fields either within the college or with other professional schools. An M.A. degree in design is offered for a very few students, and the Master of Urban Design degree is offered for a very few students, and the Master of Urban Design degree.

Course offerings. Though these courses are typi- cally staffed by more than one department, they are administered by only one. For information regard- ing ED 101, 11A, 11B, 101, 109, 169C, or 195, contact the Department of Architecture. For information regarding ED 104, 134, or 135, contact the Department of Landscape Architecture. ED 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.

For information on the Master of Urban Design de- gree, see the Urban Design section of this catalog.

Lower Division Courses

1. Introduction to Environmental Design. (3) Three hours of lecture and two hours of discussion per week. Enroll survey course. Environmental awareness and environmental design. Berkeley campus used for case study. (F) Staff

2. People and Environment. (3) Three hours of lecture and one hour of discussion per week. Survey of relationships between people and environments, designed and non-designed; interpretations of architec- ture and landscapes and introduction to their literature. (SP) Staff

11A. Introduction to Drawing. (4) Three hours of lecture and twelve hours of studio per week. Pre-requisites: 11A. One hour of studio per semester. Prerequisite: 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.

Radke

110. Computer Applications for Environmental De- sign. Two hours of lecture and four hours of laboratory 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.

Radke

C169A. American Cultural Landscapes, 1600 to 1900. (4) Three hours of lecture and one hour of dis- cussion per week. Introduction to American landscapes and their evolution. Emphasis on how landscapes reflect and are influenced by social and cultural change. Includes a field study of a significant landscape or landscape region in the United States. (SP) Radke

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

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Program Overview

Academic degree programs in the Graduate Group in Environmental Health Sciences are recommended for individuals with clear research orientations who desire to work on an intensive, focused learning experience. The details of academic programs will be explored. Emphasis will be placed on a broad, integrated approach which will take advantage of the range of professional backgrounds that the students and faculty participants bring. The work examine both public and private development opportunities and will often focus on emerging urban design issues. (F) Staff

Environmental Science, Policy, and Management
(College of Natural Resources)

Department Office: 140 Mulford Hall, (510) 643-2626
Graduate Student Services: 133 Mulford Hall, (510) 643-4246
Information at http://cnr.berkeley.edu/site/index.php

Chair: Nicholas Mills, Ph.D.

Professor:
Barbara H. Allen-Diaz, Ph.D. University of California, Berkeley. Rangeland ecology and management
Miguel A. Allen, Ph.D. University of Florida. Biological control
Ronald G. Amundson, Ph.D. University of California, Riverside. Soil microbiology
Gregory S. Biging, Ph.D. University of Wisconsin, Madison. Forest ecology
Frank C. Beal, Ph.D. State University of New York, Syracuse. Forest products and wood technology
Steven R. Beissinger, Ph.D. University of Michigan. Conservation biology
Sally K. Firestone, Ph.D. Duke University. Conservation policy
Mary K. Firestone, Ph.D. Michigan State University. Soil microbiology
Louise P. Fortmann, Ph.D. Virginia Polytechnic University. Natural resource sociology
Gordon W. Frankie, Ph.D. University of California, Berkeley. Urban entomology

Inez Fung, Sc.D. Massachusetts Institute of Technology. Climate change, biogeochemical cycles
Wayne M. Getz, Ph.D. University of Wisconsin-Madison. Population modeling, epidemiology, resource and wildlife management
Rosemary Gilmore, Ph.D. University of Tennessee. Island biogeography, evolution, arthropod systematics
Ted C. Groth, Ph.D. University of Wisconsin, Madison. Forest ecosystems
Peng Gong, Ph.D. University of Waterloo, Ontario, Canada. Remote sensing and GIS
Andrew Gutierrez, Ph.D. University of California, Berkeley. Systems ecology
John Harte, Ph.D. University of Wisconsin. Global change, ecology
Isao Kubo, Ph.D. Osaka City University, Japan. Natural resource sociology
Robert S. Lane, Ph.D. University of California, Berkeley. Parasitology, tick biology
Steven L. Lindsey, Ph.D. University of Wisconsin. Microbial ecology, epidemiology of bacterial plant diseases
Paul A. McInerney, Ph.D. University of California, Berkeley. Forest ecology, urban forestry
John G. McLoughlin, Ph.D. University of Washington. Soil science: nutrient cycling, forest soils
Carolyn Merchant, Ph.D. University of Wisconsin. Environmental health
Nicholas J. Mills, Ph.D. University of East Anglia, Norwich. Biological control

Katharine Milton, Ph.D. New York University. Tropical ecology of human/nonhuman primates, diet, parasite-host interactions
T. N. Narasimhan, Ph.D. University of California, Berkeley. Groundwater in relation to ecosystems/environment, water policy
Kevin O’Hara, Ph.D. University of Washington. Stand dynamics, forest ecology
George F. Ost, Ph.D. Columbia University. Mathematical epidemiology
Nancy Pettus, Ph.D. Cornell University. Environmental sociology/resource policy
Jeremy Proctor, Ph.D. University of California, Berkeley. Systematic entomology
Alexander H. Purcell, Ph.D. University of California at Davis. Insect vectors of plant pathogens
Vincent H. Resh, Ph.D. University of Hawaii. Aquatic ecology
George Rozin, Ph.D. University of California, Berkeley. Food psychology and gender
Jeffrey R. Romm, Ph.D. Cornell University. Natural resource and environmental policy
Garrison Sposito, Ph.D. University of California, Berkeley. Soil chemistry
Mark A. Tanouye, Ph.D. Yale University. Insect neurobiology

Loy E. Volkman, Ph.D. University of Washington. Bacteriology of pathogenesis and host interactions
Robert S. Talbert, Ph.D. University of California, Riverside. Agriculture entomology/plant-pest interactions
David L. Wood, Ph.D. University of California, Berkeley. Forest entomology/chemical ecology
John R. Anderson, Ph.D. University of Wisconsin, Madison. Medical entomology, parasitology
Peter A. Ark, (Emeritus), Ph.D.
Lee J. Ashworth, (Emeritus), Ph.D.
Kenneth F. Baker, (Emeritus), Ph.D.
David L. Brink, (Emeritus), Ph.D.
Louis C. Fletcher, (Emeritus), Ph.D.
Georges E. Calmgrene, (Emeritus), University of California, Berkeley. Biological control
Fields W. Condrey, (Emeritus), Ph.D. Pennsylvania State University. Forest pathology
Robert N. Colwell, (Emeritus), Ph.D. University of California, Berkeley. Remote sensing
Howard V. Daly, (Emeritus), Ph.D.
Lawrence S. Davis, (Emeritus), Ph.D. University of California, Berkeley. Forest management
Richard L. Doutt, (Emeritus), Ph.D. University of California, Berkeley. Biological control
John T. Doyen, (Emeritus), Ph.D. University of California, Berkeley. Systematic entomology
Louis A. Falcon, (Emeritus), Ph.D. University of California, Berkeley. Insect pathology
Willard R. Gardner, (Emeritus), Ph.D. Iowa State University. Systematic entomology
Joseph G. Hancock, Jr., (Emeritus), Ph.D. Cornell University. Fungal ecology, disease and pathogen physiology
Herbert H. Heady, (Emeritus), Ph.D. University of Nebraska. Range ecology and management
John A. Helms, (Emeritus), Ph.D. University of Washington. Silviculture
William M. Hieronymous, (Emeritus), Ph.D. University of California, Berkeley. Insect toxicology
Carl B. Huffaker, (Emeritus), Ph.D. Ohio State University. Biogeochemistry
William J. Libby, (Emeritus), Ph.D. University of California, Berkeley. Forest genetics
Angela C. Little, (Emeritus), Ph.D. University of California, Berkeley. Psychological toxicology
Werner J. Loher, (Emeritus), Ph.D. Imperial College, University of London. Insect behavior
Robert M. Markert, (Emeritus), Ph.D. University of Michigan. Wildfire control and management
William L. McIlhagga, (Emeritus), Ph.D. University of California, Berkeley. Forest economics
Woodrow W. Middlekauff, (Emeritus), Ph.D. Cornell University. Agricultural entomology
Nicholas J. Panopoulos, (Emeritus), Ph.D. University of California, Berkeley. Insect toxicology
John P. Parmelee, Jr., (Emeritus), Ph.D. University of Wisconsin, Madison. Entomology
Robert L. Pica, (Emeritus), Ph.D. University of Minnesota. Insect anatomy
Robert D. Raabe, (Emeritus), Ph.D. University of Wisconsin. Ornamental pathology
David E. Schlegel, (Emeritus), Ph.D.
Evert E. Schlinger, (Emeritus), Ph.D. University of California, Davis. Systematics and ecosystem entomology
Anton P. Schonlein, (Emeritus), University of Michigan. Mechanical behavior of wood
Milton N. Schroth, (Emeritus), Ph.D. University of Berkeley. Ecology, pathology and biocontrol
Arnold M. Schulz, (Emeritus), Ph.D. University of Nebraska. Systematics
Edward S. Sylvester, (Emeritus), Ph.D. University of California, Berkeley. Forest entomology
Laverne A. Tutt, (Emeritus), Ph.D. University of California, Davis. Soil physics, soil plant relationships
William E. Waseski, (Emeritus), Ph.D. Yale University. Forest entomology
Albert R. Worrall, (Emeritus), Ph.D.
Clarence J. Weinmann, (Emeritus), Ph.D. University of California, Berkeley.
Lee C. Wensel, (Emeritus), Ph.D. University of Minnesota. Sampling inventory, measurement
Wayne W. Wilson, (Emeritus), Ph.D. University of Wisconsin, Madison. Biodeterioration
Stephen Wilhelm, (Emeritus), Ph.D.
Eugene Zavarin (Emeritus), Ph.D. University of California, Berkeley. Wood extractive chemistry.
†Paul J. Zinke (Emeritus), Ph.D. University of California, Berkeley. Soils and forest influences.

Associate Professors
John Battles, Ph.D. Cornell University. Forest community ecology, biogeochemistry.
Claudia J. Carr, Ph.D. University of Chicago. International and rural resource development.
Robert S. Dodd, Ph.D. University of Wales. Tree genetics and genomics.
Allen H. Parker, Ph.D. Harvard University. Biogeochmecist, atmospheric chemistry.
Oregen C. Huisman, Ph.D. University of California, Davis. Fish pathology, physiogology.
Lynn Huntington, Ph.D. University of California, Berkeley. Range management, and conservation.
Whendee L. Silver, Ph.D. Yale University. Ecosystem science.

Adjunct Professors
Adina Merenlender, Ph.D. University of Rochester. Ecology, environmental policy.
Nina Maggi Kelly, Ph.D. University of Colorado. GIS and spatial analysis.
Kipling W. Will, Ph.D. University of Cornell. Insect systematics.
Kate O'Neill, Ph.D. Columbia University. International remediological economy.
Dara O’Rourke, Ph.D. University of California, Berkeley. Private sector and industry and the environment.
Per Polsdahl, Ph.D. University of Copenhagen. Conservation biology, landscape ecology.
Scott Stephens, Ph.D. University of California, Berkeley. Fire management.
Kipper W. Will, Ph.D. Cornell University. Insect systematics.
David Winickoff, M.A. Cambridge University. J.D. Harvard University. Bioethics and society.

Associate Professors
Nina Maggi Kelly, Ph.D. University of Colorado. GIS and remote sensing.
Adrian Breitenbach, Ph.D. University of Rochester. Ecology, conservation biology, landscape ecology.

Adjunct Assistant Professors
Marcelo Barcelo, Ph.D. University of California, Berkeley. Forest pathology, fire ecology, management of forests and trees.
Mark Montgomery, Ph.D. University of California, Santa Barbara. Fire management.

Lecturers
Richard Garcia (Emeritus), Ph.D. University of California, Berkeley. Biological control, mosquitos.
Harold T. Gordon (Emeritus), Ph.D. Harvard University.
Alan S. Miller (Emeritus), Du.M. San Francisco Theological Seminary, Graduate Theological Union, Environmental science, bioethics.
George O. Poinar, Jr. (Emeritus), Ph.D. Cornell University. Entomology.

ESPM Overview
The mission of the Department of Environmental Science, Policy, and Management is to broaden the educational experience of students through a diverse research, teaching, and extension capacity to bear on environmental problems from local to global scales. The biological, physical, and social sciences across 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, the development of management strategies to address them. Environmental problems demand increased understanding of social, physical, and biological systems as well as the translation of 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 Sciences, Insect Biology, and Society and Environment. The faculty have expertise in diverse areas of critical importance to environmental issues. Excellence in research and teaching in many disciplines, all brought together to focus on environmental problems, offers students the opportunity to become leaders in research, conservation, restoration, and management of the environment, biodiversity, and natural resources.

Facilities
The Department of Environmental Science, Policy, and Management is spread among Giannini Hall, Mulford Hall, Hillgard Hall, the Valley Life Sciences Building, and two buildings on the Department of Agriculture and Extension campus. In addition to laboratories and classrooms, the facilities include outstanding libraries and collections: the Bioscience and Natural Resource Library has some of the world’s largest collections and periodicals indexed on forestry, entomology, and natural resources, and extensive periodical collections in plant pathology and soils. ESPM also houses specialized laboratories for remote sensing and photogrammetry, tree physiology, pesticide chemistry, plant pathology, natural products chemistry and physiology, and ecology and wildlife biology, as well as well-equipped chemical and microbiological laboratories. There are also extensive herbaria, wildlife specimen collections, an entomological museum, insectary buildings, growth chambers, bioclimatic chambers, and greenhouses at the nearby Oxford Research Unit Transfer Station at the Division of Biological Control on the Gill Tract near Albany.

Computer facilities include microcomputer laboratories and terminal rooms. ESPM manages field facilities at the 3,000-acre Blodgett Forest near Georgetown, West Virginia. Forest’s Forest adjacent to the Sequoia National Park, the Howard Forest near Willits, Russell Reservation near Lafayette, and the Baker Forest adjacent to the department’s Summer Field Camp property. Berkeley’s location also provides easy access to the public and private resource management and conservation agencies including the U.S. Forest Service, the U.S. Fish and Wildlife Service, the U.S. National Park Service, the California Department of Forestry and Fire Protection, and the California Department of Fish and Game.

Undergraduate Programs
Pending approval, the college is planning in the next years to offer a new major in Society and Environment. Consult our web site for updates: http://espm.berkeley.edu. Courses offered by the Department of Environmental Science, Policy, and Management (ESPM) are listed below. All courses must be taken for a letter grade and at least three courses must be upper division. For transfer students, IGETC will satisfy all these requirements except ESPM 90 and the two courses in the area of interest. More detailed statement of major requirements is available at the ESPM web site and from the department office. Applications for on-campus transfer from other majors are reviewed once each semester. Check with the Undergraduate Services Office, 131 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. Students must complete a minor consisting of a minimum of five courses related to conservation studies totaling a minimum of 12 units. One of the five courses must be ESPM 10 and at least three courses must be upper division. All courses must be taken for a letter grade and must average a minimum of 2.0 grade points overall. Interested students should obtain the appropriate form from the department. Minor. Students will be awarded the minor following satisfactory completion and certification from the department.

B prefix=language course for business majors
C prefix=cross-listed 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

Major in Conservation and Resource Studies
Chiel Adviser: Gordon Frankie

The conservation and resource studies major is an interdisciplinary program designed for those who are 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 biophysical systems interactions among students, faculty, and community.

Course requirements for the major include ESPM 10, 90, 100, and 194. In the freshman and sophomore years, students will be expected to take two courses in reading and composition, one course in the biological sciences and two in the social sciences. All courses must be taken for a letter grade, and at least three courses must be upper division. Students may complete most requirements of the major in forestry and the appropriate community resource management and conservation agencies including the U.S. Forest Service, the U.S. Fish and Wildlife Service, the U.S. National Park Service, the California Department of Forestry and Fire Protection, and the California Department of Fish and Game.

Transfer Applicants
Transfer candidates should complete all lower division requirements for their intended major before entering Berkeley and may be denied admission if they have not done so. The Intersegmental General Education Transfer Curriculum (IGETC) is highly applicable to the Conservation and Resource Studies major, and is of limited application to other ESPM programs. In cases where the transfer institution does not have a course equivalent to a specific prerequisite for the major, applicants must take the course work the first semester of enrollment at Berkeley.

Summer Field Program
http://espm.berkeley.edu/summercamp/index.html

In the beautiful mountains of the Plumas National Forest, the UC Summer Field Camp provides students with an 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 provided in cabins and bunks, 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 well as forest, range, and wildlife management; forest resource inventory; forest products; harvesting practices; and many other subjects. During the eight-week program students attend a broad spectrum of the concepts and techniques that wildland resource managers 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 curriculum in the forestry and resource management majors, and the pending merged forestry and natural resource majors; but students of any major on the Berkeley campus are welcome to attend. Students may complete most requirements of the major in forestry by attending camp. Information and an application may be found at http://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.

Environmental Science, Policy, and Management / 251

Environmental Science, Policy, and Management / 251
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 in the study of the ecology and management of terrestrial, aquatic, and coastal ecosystems. Specializations have been designed 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 a 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 the master of forestry degree. By careful selection of electives, students who complete the Bachelor of Science in forestry degree can meet the U.S. Civil Service and state requirements for the forester position.

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. The 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 an added perspective it provides for students interested in how organisms function in their environment.

**Three Fields of Emphasis**

Students will be required to demonstrate competence in one of the three fields of emphasis (a-d) defined below. Specific course work within each field will be chosen by the guiding committee in conjunction with the student and approved by the graduate adviser.

**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, insect biology, and dendrology. Students pursuing a strongly interdisciplinary program may study more than one of these disciplines in depth.

**Ecosystem Sciences**

The Ecological 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 society places on terrestrial ecosystems. Central to this is collaboration between biological and physical scientists, leading to an integrated understanding of ecosystem composition, structure, and function, as well as to 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 landscapes, including rangelands, uplands, 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 landscape, regional, and global scales. The role of human activities, including ecosystem management scenarios, is integral to the ecological sciences.

**Insect Biology**

The mission of the Division of Insect Biology 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 to whole ecosystems, providing a strong integration of biological processes and a diversity of intellectual challenges for graduate students. Systematics and taxonomy, behavior, neurobiology, and ecology and biological control are notable strengths in Insect Biology. 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 social consequences. Research and teaching focus on cultural, social, political, and economic institutions affecting the treatment of natural resources and 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. This knowledge is applied to concrete problems in human-ecosystem relationships at global scales in a wide variety of cultural and historical contexts. Theories and methods are chosen from the full range of science and interpretative analysis to satisfy the standards of both significant scholarship and effective practical contribution to the problem of interest.

**b. Area of Specialization**

The area of specialization is a narrow 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, biogeochecmistry, 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 disciplinary emphasis and area of specialization. Further, in this field, students must complete 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. Students must complete the required course work as follows:

1. **Disciplinary**
2. **Ecosystem Sciences**
3. **Insect Biology**
4. **Society and Environment**

**Required Core Courses**

All master's and doctoral students in ESPM are required to take a core course sequence. The first required course, ESPM 133, Environmental Science, Policy, and Management (3 units), will be taken in the first fall semester by all new master’s and doctoral students. ESPM 201C, the seminar entitled Environmental Forum (1 unit), is required for all doctoral students and must either have been taken before, or be in progress, when the doctoral oral qualifying examination is held. Master’s students are not required to take ESPM 201C. ESPM 201S, Environmental Science, Policy, and Management (1 unit), 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 in natural sciences must complete one additional course in the application of social sciences to environmental problems. Students in social sciences must complete one additional course in the biological or physical sciences. 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 subject to the understanding that their course work must compensate for deficiencies in their preparation. We suggest that prospective applicants consult with faculty or 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 and without this information the admissions 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 only 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 laboratories, insectary buildings, controlled environmental chambers, extensive greenhouse space, and field plots at the Oxford Tract (on campus). Field facilities available to departmental faculty and students include the 3500 acre Blodgett Forest; Whistler’s Forest with giant sequoia growth at Kings Canyon National Park; Russell Reservation, located 13 miles east of the campus. Students may conduct research with an agricultural orientation at any of several University of California field stations which are located throughout the state.

Supplementing the University library are extensive holdings covering the physical, biological, and sociological dimensions of forestry and wildland resource management. The department also 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 forestry degree granted by the Department of Environmental Science, Policy, and Management. The student who has completed an undergraduate degree in forestry is usually 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 Master of Forestry 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 systems.

The M.F. program consists of three components: course work, an internship, and a professional paper. The course work consists of 24 semester units of upper division and graduate courses of which at least 15 must be graduate units. The program of study for each student must be approved and the internship must be supervised by a faculty member who is an active practitioner. The professional paper may be based on the internship or on another supervised professional work experience, or may be a report based on independent analysis. The 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 of course work and approval of the professional paper, the student will take a comprehensive oral examination covering the field of forest management. Although major emphasis will be placed on work done in the period of residence, students also should be prepared to demonstrate mastery of the major fields of their undergraduate education.

Interdepartmental Graduate Group in Range Management (M.S.)

For information about the M.S. degree in range management, see the Range 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, 133 Mulford Hall, (510) 642-4034; e-mail: espmgradproginfo@nature.berkeley.edu, http://espms.berkeley.edu/grad-programs/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 unifying principles of ecology and the fundamental concepts underlying our scientific understanding of the biosphere. Topics covered include the physical life support system on earth; nutrient cycles and factors regulating the chemical compositions of water, air, and soil; the architecture and physiology of life; population biology and community ecology; human dependence on the biosphere and the magnitude and consequences of human interventions. Taught by Daniele S. Fortunet.

3. Environmental Chemistry. (2,3) Students will receive 2 units of credit for 4 after taking Chemistry 1A or equivalent. Two hours of lecture per week; additional two-hour discussion for students enrolling for 3 units. Physical and chemical properties of the environment; how they relate to pollution and environmental degradation. Students with weak backgrounds in chemistry should enroll for 3 units. (SP) Huismann.

4. Environmental Biology. (3) Two hours of lecture and one hour of discussion per week. Prerequisites: 10 (to be passed/not passed). 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 literary and philosophical traditions; and examines how tools of scientific and literary analysis can be used to contribute to and imaginative thinking can clarify what is at stake in environmental issues and environmental citizenship. Also listed Under Graduate Interdisciplinary Studies C12 and English C77.

Environmental Sciences

20. Soils and Their Significance to Society. (3) Three hours of lecture per week. Introduction to soils; their properties, classification, distribution, and management. Taught by a scientist and landscape ecologist and geographer. (SP) Fromm.

24. Freshman Seminar. (1) Course may be repeated for credit as topics vary. One hour of seminar per week. Sections 1-4 to be graded on a passed/not passed basis. Section 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 may vary from department to department and semester to semester. Enrollment limited to fifteen freshmen. (FSP) Staff.

39. Freshman/Sophomore Seminar. (1-3) Course may be repeated for credit as topics vary. One hour of seminar per week up to a maximum of one unit per semester. Section 5-8 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. (FSP)

40. Insects and Human Society. (2) Two hours of lecture per week. An introduction to the diversity and natural history of insects in natural and human environments. The course examines the wonder of insects, their ecological interactions with the environment; the meaning for animals and plants. (SP) Webster.

Natural History of Insects. (2) Two hours of lecture per week. An outline of the main facts and principles of biology as illustrated by insects, with special emphasis on their relations to plants and animals, including humans. (SP) Gillespie, Rodnick.

44. Biological Control. (2) Two hours of lecture per week. Regulation of population of organisms, especially insects, through interactions with parasites, predators, pathogens, competitors. Discussion of examples from agricultural, forest, urban, and recreational environments. (F) Mills.
50AC. Introduction to Culture and Natural Resource Management. (4) Three hours of lecture and one hour of discussion per week. Formerly 50. An introduction to how culture affects the way we use and manage fire, wildland and urban forests, rangelands, parks and preserves, and croplands in America. The basic concepts and tools for evaluating the role of culture in resource use and management are introduced and used to examine the experience of American cultural groups and the management of western natural resources. This course satisfies the American cultures requirement.

(FSP) Staff

60. Environmental Policy, Administration, and Law. (4) Three hours of lecture and one hour of discussion per week. Formerly 151. Introduction to environmental policy process focuses on history and evolution of political institutions, importance of property, federal and state roles in decision making, and challenges of environmental policy. Emphasis is on use of science in decision making, choices between regulations and incentives, and role of bureaucracy in resource policy. Case studies on natural resource management, risk management, environmental regulation, and environmental justice. (FSP) Staff

72. Introduction to Geographic Information Systems. (3) Two hours of lecture and three hours of laboratory per week. Prerequisites: Three years of high school math, Introduction to computer systems, data processing, and natural resource studies. Components of geographic information systems; concepts of surveying, mapping, and remote sensing as data sources; various methods of data processing and analysis including classification, map overlay, buffer analysis, topographic modeling, spatial interpolation, and map design with a GIS. Intensive hands-on practices with relevant computer software packages. (SP) Gong

80. Environmental Physics. (3) Three hours of lecture and one hour of discussion per week. Formerly Intermediate Studies 80. Elementary concepts of physics with application to problems of environment, energy, pollution, biology, geology. Specific examples of the role of physics in contemporary social issues. (FSP) Staff

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 3-5 to be graded on a letter grade basis. Prerequisites: At discretion of instructor. (SP) Staff

90. Introduction to Conservation and Resource Studies Major. (1) Three hours of lecture per week. Must be taken on a passed/not passed basis. Introduction to the major, emphasizing each student’s educational goals. Overview of ecological problems and contrasting approaches to solutions through institutional and community-based efforts. Required of all CRS sophomore majors and all entering off-campus transfer students to CRS major. Restricted to CRS majors. Offered in Fall and Spring semesters. (FSP) Huisman, Frank

98. Directed Group Study in ESPM. (1-3) Course may be repeated for credit. One hour of lecture/discussion per week per unit. Must be taken on a passed/not passed basis. Prerequisites: Lower division standing, consent of instructor, adviser, and department chair. Study of special topics that are not covered in depth in regular courses in the department. (FSP) Staff

99. Supervised Independent Study and Research. (1-3) Course may be repeated for credit. Individual meetings. Must be taken on a passed/not passed basis. Prerequisites: Membership in division, (3.4 GPA or better), consent of instructor, adviser, and department chair. Usually restricted to ESPM majors. Supervised independent study or research on topics relevant to the major and approved by the department. Students must be registered in open courses. Open to students in good standing who, in consultation with a faculty sponsor, present a proposal with clearly formulated objectives and means of implementation. Intended for exceptional students. (FSP) Staff

Upper Division Courses

General Broad Spectrum Courses

100. Environmental Problem Solving. (4) Three hours of lecture and one and one-half hours of discussion/demonstration per week. Prerequisites: One course in ecology; one course in mathematics or statistics; one course in a social science or economics. Analysis of contrasting approaches to understanding and solving environmental 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 resource and management plans. (F) Frankie, Milton

102A. Terrestrial Resource Ecology. (4) Three hours of lecture and four hours of laboratory per week. Prerequisites: Biology 1A-1B or equivalent. 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 biomes. During 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 course is designed to introduce students to the major sampling systems used in natural resources and ecology. It also introduces students to important sampling and measurement concepts in grassland, forest, wildlife, insect, soil, and water resources. (FSP) Bigger

102L. Laboratory in Natural Resource Sampling. (2) Four hours of discussion/laboratory per week. Prerequisites: Statistics 2 or 20. This laboratory course is designed to offer opportunities to students to use 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. (FSP) Bigger

102C. Resource Management. (4) Three hours of lecture and three hours of laboratory per week. Prerequisites: Precalculus, 156, 194, and 70 are recommended. Presents advanced approaches to public and private natural resource management decision making. The focus is on goals, criteria, data, models, and technology for quantifying and communicating natural resource planning options. A range of contemporary air, soil, wetland, rangeland, forest, social, economic, and ecosystem management problems is addressed. (SP) Gillies

102D. Resource and Environmental Policy. (4) Three hours of lecture and one hour of discussion per week. Prerequisites: Environmental Economics and Policy 1, equivalent courses, or consent of instructor. The course develops capacities to analyze and affect the cause, dynamics, and consequences of resource policies. Operational policy formulation and execution. It develops concepts of public policy and how cultural, legal, political, economic, and administrative processes form, execute, and modify it. It analyzes public policy formation and execution. It examines resource and environmental consequences of national macropolicy and international arrangements, and develops an ability to maintain a professional stance in severe contests of values. Oral presentation skills are developed. (SP) Staff

C103. Principles of Conservation Biology. (4) Three hours of lecture and one hour 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 biodiversity, and the level of the gene, species, and ecosystem are examined. Tools and management options derived from ecology and evolutionary biology that can recover or prevent the loss of biological diversity are discussed. Also listed as Integrative Biology C156. (FSP) Beissinger, Palsboll

C104. Modeling and Management of Biological Resources. (4) Three hours of lecture and three hours of laboratory per week. Prerequisites: Conservation Biology 100. Models of population growth, chaos, life tables, and Leslie matrix theory. Harvesting and exploitation theory. Methods for analyzing population interactions, predation, competition, fisheries, forest stands, and insect pest management. Genetic aspects of population management. Mathematical theory based on simple difference and ordinary 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

105A. Conservation Biology. (4) Three hours of lecture and one hour of discussion per week, plus a mandatory two and one-half day field trip. Prerequisites: Basic biology or ecology course or consent of instructor. Formerly 105. Theory and practice of conservation biology in developed and developing countries. Conservation biology will be examined within a context that integrates biology, land management, development with cultural, socioeconomic, and political constraints. Role of biologists in policy and decision-making in land management/development priorities will be reviewed. Case histories will be analyzed for their contributions and for model value. (FSP) Frankie, Milton

105C. Genetic Diversity and Conservation. (3) Students will receive 1.5 units for 105C after taking Integrative Biology 161. Three hours of lecture per week. Prerequisites: Biology 1A-1B. Introduction to the study of genetic variation within species and the population genetic principles underlying the conservation of genetic diversity and the processes of genetic evolution. Patterns of variation and gene pool structure; sexual and asexual populations; mating systems; fitness and selection; the genetics of fragmentation and small populations; genetic evolution; issues for conservation genetics. (SP) Spiech

106. American Wildlife: Identification and Conservation. (3) One hour of lecture and three hours of laboratory per week, plus four Saturday field trips. Identification and life histories of wildlife in North America, with emphasis on species with important ecological and recreational value. The conservation of rare and endangered species is highlighted. (FSP) staff

C107. Biology and Geomorphology of Tropical Islands. (3) Nine hours of lecture for 6 weeks; field projects for 6 weeks; three hours of lecture for 3 weeks. Study of marine and evolutionary biology of island terrestrial and freshwater organisms, and of marine organisms in the coral reef and lagoon systems will be studied, and the geomorphology of volcanic islands, and terrestrial and reef island biogeography will be illustrated with topics linked to subsequent field studies on the island of Moorea (French Polynesia). Also listed as Integrative Biology C156. (FSP) Staff

108A. Trees: Taxonomy, Growth, and Structures. (2) Two 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 communication.

108B. Forest Genetics. (3) The ecology of forest trees, applications to conservation biology, and the role of bacteria, actinomycetes, algae, protozoa, and fungi in the context of western type ecosystems. Specific processes and mechanisms of inheritance for understanding principles of population genetics and analysis of quantitative traits. The ecological basis for range management activities, considered in the context of western type ecosystems. Specific processes and mechanisms of inheritance for understanding principles of population genetics and analysis of quantitative traits. It examines methods of measuring and describing population genetics in fruit trees, and their implications for developing strategies for commercial 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; their distribution, growth, forage values, and responses to use. (SP) Bartolome

110. Primate Ecology. (4) Three hours of lecture per week. This course examines the comparative ecology of sympatric primate species in forests of Central and South America, Africa, and South East Asia. In addition to primate ecology, students will master comparative information on the three main tropical forest regions of the world, the impact of selection and domestication on primate densities and diversity in each area. (F) Silver

111. Ecosystem Ecology. (3) Three hours of lecture per week. Prerequisites: Biology 1B. Formerly 111, intended for majors in Ecosystem Ecology. This course will cover the principles of ecosystems ecology, emphasizing terrestrial ecosystems, and will consider how these principles apply to ecosystem recovery and to regional and global fluxes of carbon and nutrients. (SP) Battles, Silver

Ecology

112. Microbial Ecology. (3) Two hours of lecture and three hours of laboratory per week. Prerequisites: Biology 1A or equivalent; Biology 1B is recommended. Introduction to the ecology of microorganisms. Topics include interrelationships of microorganisms and their environment; the role of bacteria, actinomycetes, algae, protozoa, and fungi in the context of the ecosystem and in global ecology; physical, chemical, and biological properties of terrestrial, aquatic, and organismo habitats; population dynamics. Enrollment is limited. (SP) Huisman

113. Insect Ecology. (2) Two hours of lecture per week. Prerequisites: Biology 1B or consent of instructor. Ecology of insects: interactions with the physical environment; structure and functioning of insect populations and communities; behavioral ecology of predator-prey interactions; plant-insect interactions; social 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 or graduate standing. Introduction to wildlife ecology and its relationship to management programs. Includes population, community, and ecosystem levels of organization, followed by selected case studies. (F) Brashares

115B. Biology of Aquatic Insects. (3) Two hours of lecture and three hours of laboratory per week. Prerequisites: 101A, 101B, or equivalent. A biological science course in aquatic ecology and identifications of aquatic insects, including their role as indicators of environmental quality. Offered odd-numbered years. (F) Rech

116A. Forest Ecology. (4) Three hours of lecture and four hours of field laboratory exercise per week plus weekend field trip. Prerequisites: 101A, 8 units of biological science, and 8 units of chemistry. The ecology of forests from the perspectives of ecosystem analysis, physiological plant ecology, and vegetation dynamics. Measurement and understanding of forest ecosystems as a basis for management of forest ecosystems. Field laboratory exercises to illustrate ecological principles and to develop techniques for the assessment of forest ecosystems. (F) McBride, Battles

116B. Range Ecology. Improvements, and Management. (3) Three hours of lecture per week. Prerequisites: One course in ecology. The ecological basis for range management activities, considered in the context of western type ecosystems. Specific processes and management 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 a course in chemistry or conservation biology. Introduction to the ecology of tropical terrestrial ecosystems, with particular emphasis on neotropical forests. Explores unique aspects of tropical ecosystems, especially nutrient cycles, net primary productivity, biodiversity, forest structure and dynamics, disturbance, and the natural history of forest organisms. Basic ecology is integrated with discussion of human disturbance of tropical ecosystems, and the global importance of tropical forests. (SP) Silver

117. Urban Garden Ecosystems. (3) 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 fundamentals of horticulture, soil properties and fertility, pest and disease management, and food preservation. Laboratories include methods in garden design, plant propagation, compost preparation, irrigation systems, pest management, individual or group projects, demonstrations, and discussions. Enrollment may be limited. (F) Huisman

118. Agricultural Ecology. (3) Two hours of lecture per week. Prerequisites: Consent of instructor. Focus on the role of herbivores and their effects on plant communities, including human disturbances, restoration of tropical ecosystems, and the global importance of tropical forests. (SP) Silver

119. Soil, Water, Atmosphere

120. Soil Characteristics. (3) Three hours of lecture per week. Prerequisites: Chemistry 1A, 3A, Introduction to general chemistry, and biology or consent of instructor. Plant-toxins and their effects on animals, hormonal interactions between plants and animals, feeding preferences, animal phytotoxins, defense substances, bio-chemical interactions between higher plants, and phytoalexins and phytotoxins. (F) Kubo

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; the effects of biogeochemical processes on soil ecosystem development. (SP) Amundson

122. Field Study of Soil Development. (1) Five day-long Saturday field trips to locations in central California. The field study of soil development and morphologic processes. In-depth soil descriptions, study of factors controlling soil development; relationship of soil morphology to land use; quaternary geology of California; use of soils in dating landscapes. (SP) Amundson

124. The Soil as a Medium for Plant Growth. (3) Three hours of lecture per week. Prerequisites: Chemistry 1A, 3A, Chemical, physical, biological processes which control nutrient availability in soil-plant systems. Ion movement, water potential relations, plant-microbe interaction are emphasized. Characteristics and causes of acid, alkaline, and saline soils. Offered odd-numbered years. (SP) Firestone, Silver

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 environmentally important elements in soils. Covers role of soil minerals and organic matter in controlling retention and release of soluble ions and organic compounds; reaction mechanisms. Applies principles and concepts of soil chemistry to different environmental conditions in soils, e.g., acidity/alkalinity, aeration, water potential, and salinity, to crop production. (SP) Doner

127. Terrestrial Ecosystem Analysis: Below Ground Processes. (4) Two hours of lecture and six hours of laboratory per week. Prerequisites: 120 or consent of instructor. This course emphasizes laboratory field methods to understand selected environmentally important terrestrial ecosystem functions and processes. Basic concepts of biologic, chemical, and physical analyses of soil and their applications are presented through lectures and workshops. During the last part of the course, students will develop and complete independent projects using a combination of techniques presented to the class. Each student is directed to get hands-on experience in understanding soil processes, analyzing and quantifying their observations, and undertaking a research project to apply their knowledge to a specific problem. (SP) Doner 

C128. Environmental 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 sub-surface environment. Chemical reactions in subsurface waters. Geochemical pathways of detoxification, Chemical modeling of pollutant geochemistry, Also listed as Civil and Environmental Engineering C116. (SP) Sposito

C129. Biomecology. (3) Three hours of lecture per week. Prerequisites: Mathematics 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 soil affects the physiological status of plants and how plants affect their physical environment. Using experimental data and theory, it examines physical, biological, and chemical processes affecting transfer of momentum, energy, and material (water, CO2, atmospheric trace gases) between vegetation and the atmosphere. Plant biomecology instrumentation and measurements are also discussed. Also listed as Earth and Planetary Science C129. (F) Baldocchi

Environmental Microbiology

vival of North American forests including the evolution of these interactions due to modern human policies of preservation and management and exploitation. (F) Bruns

135. Biological Control of Pests. (2) Two hours of lecture and three hours of laboratory per week. Prerequisites: 146 and 142 or consent of instructor. Study of various host-paraSITE, prey-predator systems, especially those of significance to agriculture, forestry, urban, and recreational environments. Implementation of biological control methods and involving importation, augmentation, and conservation of natural enemies. Offered odd-numbered years. (F) Mills

136. Forest Health. (2) Two hours of lecture and three hours of laboratory per week. Prerequisites: 101A-101B, 185, junior standing, and consent of instructor. Examination of forest ecology and forest health concepts and their interactions with other disturbances. Explore forest health concepts in terms of the frequencies and severities of these disturbances from utilitarian and ecosystem perspectives. (SP) Staff

C138. Introduction to Comparative Virology. (4) Three hours of lecture per week. Prerequisites: Introductory chemistry (1A or 3A-B or equivalent) and introductory biology (101 or equivalent)—preferably completed but may be taken concurrently. Viruses will be considered as infectious agents of bacteria, plants, and animals (including vertebrates). Understanding of the unique physiological mechanisms of viruses will be compared with respect to biochemical, structural and morphological properties, and strategies of infection and replication. Also listed as Plant Biology C114 and Molecular and Cell Biology C114. (SP) Volkman, Jackson

Entomology

140. General Entomology. (2) Two hours of lecture and six hours of laboratory per week. Prerequisite: Introductory biology or a laboratory science. Biology of insects, including classification of orders and common families, morphology, physiology, behavior, and ecology. (SP) Purcell, Rodlerick

144. Insect Physiology. (2) Two hours of lecture and one hour of discussion per week. Prerequisites: General biology, zoology, or entomology. A survey of the unique physiological mechanisms of insects, including the analysis of physiological systems at the cellular-molecular level. The roles of the nervous and endocrine systems in coordinating physiological processes are emphasized. (SP) Tanouye

145. Arthropod-Borne Zoonotic Diseases: Basic Principles and Methods of Study. (2) Two hours of lecture per week. Prerequisites: 146 or consent of instructor. This course will focus on the ecology and epidemiology of zoonotic disease agents transmitted to humans by arthropods. Basic principles will be discussed, and techniques for conducting field and laboratory studies will be demonstrated. Includes methods for collecting blood-feeding arthropods and trapping selected vertebrates; processing of specimens for study; and examination of arthropod and vertebrate tissues for pathogens. Offered even-numbered years. (SP) Lane

146. Medical/Veterinary Entomology. (2) Three 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 parasite. Examples of vector-borne diseases considered include malaria, yellow fever, plague, typhus, filariasis, African and American trypanosomiasis, Lyme disease, Rocky Mountain spotted fever, swimming fevers. Offered odd-numbered years. (SP) Lane

C146L. 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 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 identification and interpretation of insect relationships to habitats, their behavior and plant-insect interactions. Collection and preparation of specimens with important biological data. (F,SP) Staff

146. 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, their mode of action, resistance mechanisms, and methods of evaluating their safety and activity. Offered odd-numbered years. (SP) Casida

C148. 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, their mode of action, resistance mechanisms, and methods of evaluating their safety and activity. Also listed as Nutritional Sciences and Toxicology C114. (SP) Casida

C149. Molecular Ecology. (4) Students will receive no credit for 449 if they also received credit for 149 prior to spring 2003. Three hours of lecture and one hour of discussion per week. Prerequisites: Integrative Biology C163, 161 or Molecular and Cell Biology C142 (may be taken concurrently), or consent of instructor. Formerly Molecular Biology C149. This course focuses on the use of molecular genetic information in ecology. Applications and techniques covered range from analysis of parentage and relatedness (DNA fingerprinting and multilocus genetic analysis) through gene flow, biogeographic history and community composition (comparative DNA sequencing) to analysis of diet and trophic relationships (DNA-based diet analysis and multilocus genetic analysis) through gene flow, biogeographic history and community composition (comparative DNA sequencing) to analysis of diet and trophic relationships (DNA-based diet analysis and multilocus genetic analysis) through gene flow, biogeographic history and community composition (comparative DNA sequencing) to analysis of diet and trophic relationships (DNA-based diet analysis and multilocus genetic analysis) through gene flow, biogeographic history and community composition (comparative DNA sequencing) to analysis of diet and trophic relationships (DNA-based diet analysis and multilocus genetic analysis) through gene flow, biogeographic history and community composition (comparative DNA sequencing) to analysis of diet and trophic relationships (DNA-based diet analysis and multilocus genetic analysis) through gene flow, biogeographic history and community composition (comparative DNA sequencing) to analysis of diet and trophic relationships (DNA-based diet analysis and multilocus genetic analysis) through gene flow, biogeographic history and community composition (comparative DNA sequencing) to analysis of diet and trophic relationships (DNA-based diet analysis and multilocus genetic analysis) through gene flow, biogeographic history and community composition (comparative DNA sequencing) to analysis of diet and trophic relationships (DNA-based diet analysis and multilocus genetic analysis) through gene flow, biogeographic history and community composition (comparative DNA sequencing) to analysis of diet and trophic relationships (DNA-based diet analysis and multilocus genetic analysis) through gene flow, biogeographic history and community composition (comparative DNA sequencing) to analysis of diet and trophic relationships (DNA-based diet analysis and multilocus genetic analysis) through gene flow, biogeographic history and community composition (comparative DNA sequencing) to analysis of diet and trophic relationships (DNA-based diet analysis and multilocus genetic analysis) through gene flow, biogeographic history and community composition (comparative DNA sequencing) to analysis of diet and trophic relationships (DNA-based diet analysis and multilocus genetic analysis) through gene flow, biogeographic history and community composition (comparative DNA sequencing) to analysis of diet and trophic relationships. (SP) Lane

Environmental Policy and Law

150. Special Topics in Environmental Science, Policy, and Management. (2-4) Course may be repeated for credit as topic varies. One hour of lecture per week plus two hours of laboratory per week. Special topics in Environmental Science, Policy, and Management. Topics may vary from semester to semester. (F,SP) Staff

154. Environmental Analysis. (4) Three hours of lecture, one hour of discussion, and two hour project group per week. Prerequisites: 151 (formerly Conservation and Resource Studies 130) or consent of instructor. Methods for describing and assessing human-induced changes on environmental systems. Provides skills in the collection and evaluation of data on physical, ecological and social impacts as they relate to environmental planning and problem solving. Includes group environmental impact report writing. One required field trip. (SP) Staff

Natural Resource Policy and Economics

155. Sociology of Natural Resources. (4) Three hours of lecture and one hour of discussion per week. Sociological perspective on the relationship between societies and wildland resource management; social definition of natural resources, identification of public, socialization of resources, public involvement, and social impact analysis. (F) Fortman

C159. Human Diet. (4) Three hours of lecture per week plus two hours of voluntary discussion every other week. Since we eat every day, wouldn’t it be useful to know more about human diet? This course provides an overview of the human dietary niche, biological variation related to diet, and patterns of diet change, demonstrating the impact methods and processing techniques and development of regional cuisines, modern diets and their problems, food taboos, human attitudes toward foods, and dietary policies. Also listed as Nutritional Sciences and Toxicology C115. (SP) Milton

Environmental History, Philosophy, and Ethics

C160. American Environmental and Cultural History. (3) Three hours of lecture and one hour of discussion per week. Formerly 160AC. 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 European and African Americans. Natural resources development includes gathering-hunting-fishing; farming, mining, 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 C120. This course satisfies the American cultures requirement. (F) Merchant

160AC. American Environmental and Cultural History. (4) Three hours of lecture and one and one-half hours of discussion per week. Formerly C160. 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 European and African Americans. Natural resources development includes gathering-hunting-fishing; farming, mining, 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 C120. This course satisfies the American cultures requirement. (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 environmental literature and the philosophies embodied therein. Offered even-numbered years. (F) Merchant

162. Bioethics. (3) Two hours of lecture and one hour of discussion per week. Exploration of the ethical dilemmas arising from recent advances in the biological sciences: genetic engineering, socio-biology, health care delivery, behavior modification, patents, rights, social or private control of research. (SP) Casida

163AC. Environmental Justice: Race, Class, Equity, and the Environment. (3) Students will receive no credit for 163AC after taking Sociology 128. Deficits 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, analyzing the implications of race, class, labor, and equity on environmental decision-making and regulations. Environmental justice movements and struggles within poor communities and communities of color in the U.S., including African Americans, Latin American, and Native American Indians. Frameworks
and methods for analyzing race, class, and labor. Cases of environmental injustice, community, and govern-
ment responses, and future strategies for achiev-
ing environmental and labor justice. Also listed as So-
ciology 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. Emphasis on organization and function of agri-
cultural and mineral development, with particular con-
sideration of the involvement of natural resource availabil-
ity, technology, and patterns of international aid. (SP) Carr

166. Natural Resource Policy and Indigenous Peoples. (4) Three hours of lecture and one hour of dis-
cussion per week. Prerequisites: 165 (formerly CRS 163) or consent of instructor; upper division standing. Critical analysis of the role 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) Carr

167. Environmental Health and Development. (3) Three hours of lecture per week. Impact of environ-
mental alterations resulting from development pro-
grams and other human activities which affect the health status of people living in developed and less developed parts of the world. Case studies and mitigation mea-
sures of diseases associated with water storage uti-
ization. (F) Staff

168. Political Ecology. (4) Three hours of lecture and one hour of discussion per week. Analysis of environ-
mental problems in an international context with a focus on political and economic processes, resource access, and representations of nature. Discussion of the relation of political economy, the new media and reflect influence environmental politics. Ap-
proaches 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 political processes are examined over the last 25 years. Attention is paid to different per-
spectives in global environmental politics, the actors in-
volved, how well international agreements address the problems are being proposed to solve, and the main debates in the field, including trade-environmental conflicts, security, and environmental justice issues. Is-
ues covered vary, but may include climate change, biodiversity, population, and toxics. (F) O'Neill

Resource Assessment and Evaluation

171. Forest and Wildland Resource Inventory. (4) Three hours of lecture and three hours of laboratory per week. Prerequisites: 70, 156, and Statistics 20 or equivalent; Math 16A-16B recommended. Statistical and practical concepts presented to introduce concepts of forest and wildland resource inventory systems. Sta-
tistical methods in inventory, sampling, stratified, double and two-stage sampling as well as basic methods of re-
gression estimation. Applications include timber sale; compartment, forest, and rangeland stock-
estimates, as well as estimates of change or growth. (SP) Staff

172. Photogrammetry and Remote Sensing. (3) Two hours of lecture and three hours of laboratory per week. Prerequisites: Geometry, algebra, and trigonome-
try. This course introduces the concepts and princi-
bles of photogrammetry and remote sensing, specifically aerial photography, as important data col-
collection and analysis tools for natural resources man-
agement in spatial sciences such as ecology, geog-
raphy, landscape architecture, environmental engineering, and environmental design. Photo measures of scale, area, and object height, flight planning, an introduction to the electro-
magnetic spectrum, photo interpretation and mapping, digital remote sensing, and data management in ge-
ographic information systems will be discussed. (SP) Gong

173. Characteristics and Utilization of Woody Biomass. (3) Two hours of lecture and three hours of labora-
tory per week. Prerequisites: Consent of in-
structor. Past, current, and emerging issues and ap-
proaches to the use and expansion of woody biomass as a useful wood products; performance of materials in use;
substitutions and hybrid materials. (SP) Beall

176. Performance of Wood in Structures. (3) Three hours of lecture per week. Formerly Architecture 153. The survey of wood properties and wood products of importance to the design construction. Em-
phasis is placed on prevention of biodeterioration. Case studies will be presented to avoid wood failure in structures, showing proper usage of wood products. (F) Beall

Resource Management

C180. Atmospheric Chemistry. (3) Three hours of lecture and one hour of discussion per week. Prereq-
quisites: Chemistry 1A-1B, Physics 8A or consent of in-
structor. Focuses on the chemical composition of the Earth’s atmosphere. Effects of human influence: Stratospheric ozone depletion, increasing concentrations of greenhouse gases, changes in the distribution of greenhouse gases, smog. Also listed as Earth and Planetary Science C180. (F) Goldstein

181A. Wildland Fire Science. (3) Two hours of lect-
ure and three hours of laboratory per week. Prereq-
quisites: Consent of instructor. Formerly 181. Funda-
mentals of wildland fire including fire behavior, fire history methods, prescribed fire tech-
niques, fire ecology, fire management, fire in the urban-wildland intermix, wildland fire, and ecosystem sustainability. Laboratories on inventory methods, fire history, monitoring of fire behavior and risk, and pre-
scribed burning. (SP) Stephens

181B. Understanding Urban-Wildland Interface Fires. (3) Three hours of lecture per week. Prereq-
quisites: Consent of instructor. Covers the basics of how wildfires behave at the interface of homes and wild-
lands. Included are the interactions between vegeta-
tion and structural fires, the relationship of fires with dif-
ferent kinds of biomass, modeling fire behavior given different development and vegetation scenarios, im-
acts on air quality, and case studies from around the globe. (F) Beall

182. Forest Operations Management. (4) Three hours of lecture and four hours of laboratory per week. Prerequisites: Upper division standing in a re-
source discipline. Course details the fulfillment of human needs through the use of timber, coupled with the man-
agement required to make operations culturally and environmentally appropriate. The framework for under-
standing human interaction within forested en-
vironments is an operational mesh of technical, financial, organizational, legal, and ecological factors. The
worldwide range of stewardship activities studies includes access, product harvest, tree tending, re-
generation, and protection. (F) Staff

183. Forest Planning and Management. (4) Three hours of lecture and three hours of laboratory per week. Prerequisites: 70, 102B or 171, 102C and 185. Planning and management of forestslands to meet mul-
tiple objectives of land owners and the society. Pro-
cession is made for new and emerging forest manage-
ment dynamics for quantitative analysis with GIS. Fundamentals of land-use planning, valuation, multi-
ple goal decision analysis, and forest management scheduling, budgeting, and implementation skills are empha-
sized. Oral presentation required. (SP) Staff

184. Agroforestry Systems. (3) Two hours of lecture and three hours of laboratory per week. Prerequisites: Upper division standing. Agroforestry principles and systems are introduced and examined, with em-
phasis on contemporary temperate agroforestry sys-
tem design and management. Economic, biologic, so-
cial, and political conditions for successful agroforestry systems are analyzed. Some laboratory sessions will

be field trips that will extend beyond the scheduled lab-
time. (SP) Allen

185. Multiple Resource Silviculture. (4) Three hours of lecture and four hours of laboratory per week. Prereq-
quisites: 116A or course in community ecology. Con-
cepts and applications of silviculture for the estab-
lishment, growth, conservation, and use of forest trees and stands. Silviculture is presented as a tool to meet multiple resource and ecosystem management objectives related to wildlife habitat, watershed re-
creation and timber production. Three Sat-
urday field trips will be scheduled in lieu of several lab-
oratories. (F) O’Hara

186. Management of Grassland and Woodlands. (4) Two hours of lecture and four hours of laboratory per week. Prerequisites: Biology course or consent of in-
structor. Application of plant and animal ecology to manage-
ment of grassland, shrubland, and woodland ecosystems. Grazing dynamics and management op-
tions for conserving these rangelands, whether the an-
imal is for use for one or a combination of ranching,
recreation, wildlife habitat, watershed, and open space purposes. Laboratory includes experimental compar-
ison of grassland species. Two weekend field trips. (F) Bartolome, Hunsinger

187. Wildlife Conservation. (3) Two hours of lecture and three hours of laboratory per week. Prerequisites: 114. Advanced coverage of the principles, procedures, and techniques of managing terrestrial wildlife, with an
phasis on North American forest and rangeland ecosystems. (SP) Staff

188. Case Histories in Wildlife Management. (2) Four hours of seminar per week. Prerequisites: 114. Seminar format with presentation and discussion by each student, with long term paper requirement. Ex-
cluded in depth of current issues in wildlife man-
agement. (SP) Barrett

189. Senior Workshop in Professional Forestry. (3) Two hours of lecture per week plus two weekend field trips per semester. Prerequisites: Senior or graduate standing; 120, 136, 182, and 185, or consent of instructor. A capstone workshop with faculty and out-
side professionals for students planning to enter the field of professional forestry. The workshop develops and examines current and advanced critical capacities about real-world dynamics and how professional performance fits with them. Student pro-
jects 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: Undergraduate standing and con-
sent of instructor. Interdisciplinary study of issues for advanced students. Designed to develop skills in crit-
ical analysis of specific issues. Different topics 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 param-
ters, as well as the historical and biological dimen-
sions which have contributed to the evolution of our present attitudes toward the forest. Also listed as Undergrad Interdisciplinary Studies C136, History of Art and American Studies C112F. (F,SP) Lovell, McBride

192. Molecular Approaches to Environmental Prob-
lem Solving. (2) Two hours of lecture/discusion per week. Prerequisites: Junior or senior standing in Molecular Environmental Biology major, or consent of instruc-
tor. Seminar in which students consider how modern biotechnological approaches, including re-
combinant DNA methods, can be used to recognize and solve problems in the area of conservation, habi-
tat and endangered species preservation, agriculture

B prefix=language course for business majors
C prefix=course satisfies R& requirement
AC suffix=course satisfies American cultures requirement
*Professor of the Graduate School
†Recipient of Distinguished Teaching Award

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and environmental pollution. Students will also develop and present case studies of environmental problems and research oddments in educational forms for all age levels and all facets of society, including schools. Concentrated experience in participatory education. Also listed as Education C193A. Hurst

194. Senior Seminar in Conservation and Resource Studies. (2) Two hours of seminar per week. Prerequisites: Senior standing in CRS major. Seminar in which students synthesize their knowledge, skills, and interests into a holistic perspective. A one-hour oral presentation in the area of interest and a senior thesis synthesizing the areas attempted is required. Required final seminar. (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. Prerequisites: Senior standing in CRS major; 3.2 minimum GPA. Eligibility restrictions to GPA and major. Supervised independent honors research specific to aspects of environmental science, policy, and management, followed by a written report to department. Submission of no 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. Prerequisites: Upper division standing; consent of advisor, faculty sponsor, and ESPM department; normally restricted to upper division ESPM major. 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) Mills

196B. Internship in ESPM—Research/Seminar Module. (3-8) Two hours of seminar per week; variable hours of research/activity for five weeks. Prerequisites: Upper division standing in an ESPM major; consent of advisor, faculty sponsor; completion of 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), and 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. Prerequisites: 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 seminar per week. Must be taken on a passed/not passed basis. Prerequisites: Upper division standing; campus and departmental restrictions apply. Enrollment restrictions apply; see the Courses and Curriculum web site for requirements. 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) Two hours of lecture/discussion and one hour of seminar per week. Prerequisites: Graduate standing in ESPM. Formerly 200B. Research projects and approaches in environmental science, policy, and management. An introduction to the diverse ways environmental problems are researched, comparing the approaches and methods of various disciplines represented among faculty and students. This course is the first of the core course sequence required for all ESPM graduate students. (F,SP) Staff

201B. Case Studies in Environmental Science, Policy, and Management. (3) Three hours of lecture per week. Prerequisites: 201A and graduate standing in ESPM. Formerly 200A. This course applies the concepts and methodologies of Environmental Science, Policy, and Management 201A, incorporating specific local and regional case histories that emphasize a strong field component and cover an array of issues representative of the ESPM program. Includes two field trips. This course is the second semester of the core course sequence required for all ESPM graduate students. (SP) Staff

201C. Environmental Forum. (1) Course may be repeated for credit. Two hours of seminar/discussion per week. Must be taken on a passed/pass/failed basis. Prerequisites: Graduate standing in ESPM. Formerly 200C. Presentation and analysis of current topics in environmental science, policy, and management. This course is required for all ESPM doctoral students. (F,SP) Staff

2015. Environmental Science, Policy, and Management Colloquium. (1) One and one-half hours of seminar/discussion per week. Must be taken on a satisfactory/unsatisfactory basis. (SP) Staff

202. Advanced Natural Resource Sampling. (2) One and one-half hours of seminar per week per unit. Must be taken on a passed/not passed basis. Prerequisites: 102B. This seminar focuses on important sample survey designs (simple random, systematic, stratified, ratio, regression, clustered, two-stage, multi-stage, and adaptive) used in natural resources and ecology. We critique research articles for appropriateness of their sampling design in meeting specified objectives. Alternate sampling designs and their relative merits are discussed. (F) Biging

204. Research Reviews in Animal Behavior: Behavioral Ecology. (1) Course may be repeated for credit. One hour and one-half hours of lecture per week. 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 for a journal 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) Staff

205. Quantitative Methods for Ecological and Environmental Modeling. (3) Three hours of lecture per week. 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 statistical techniques. This course will be recommended as a prerequisite for advanced modeling in Integrative Biology, Energy and Resources Group, and Environmental Science, Policy, and Management. Also listed as Integrative Biology C205 and Energy and Resources Group C206. (F,SP) Staff

208. Seminar in Ecological Genetics. (2) Two hours of lecture/discussion per week. Current topics in multigenerational allocation, sex determination, and the genetics of phenotypes and its interdependence with ecological variables. (F) Dodd

210. Spatial Data Analysis for Natural Resources. (3) Three hours of lecture/discussion per week. Prerequisites: One year of upper division probability and statistics, one course in multivariate analysis, and consent of instructor. An introduction to natural resource spatial data analysis. Topics to be covered include spatial sampling, quadrat analysis, distance methods, point pattern analysis, K function, spatial autocorrelation, and geostatistics (Kriging). Readings will cover applications in various natural resource fields as well as general theory. (SP) Biging

Environmental Science

C211. Modeling Ecological and Meteorological Phenomena. (3) Three hours of lecture per week. Prerequisites: 102 or consent of instructor. Modeling methods in ecology and meteorology and their effects of anthropogenic stress on natural systems. Also listed as Integrative Biology C271 and Energy and Resources Group C202.

C213. Modeling of Population Processes. (2) Two hours of lecture/discussion per week. Prerequisites: Multivariate calculus, one semester of computer programming, and consent of instructor. Discussions center on the fundamentals of modeling population processes in ecology, evolution, and behavior. Current topics in the course will be reviewed. Students will have an opportunity for hands-on experience with simulation software packages. Oral and written presentations will be required. Offered odd-numbered years. (F) Geitz

C220. Geochemical Approaches to Modern and Past Environments and Climates. (4) Course may be repeated for credit. Three hours of seminar per week. Prerequisites: Graduate standing or consent of instructor. Formerly 220. Research seminar graduate course on the use of geochemical methods and approaches in paleoenvironmental/paleoclimate reconstruction, and in modern environmental studies. Discussion of modern processes that are a key element in understanding past environments, and the effects of anthropogenic stress on natural systems. Offered even-numbered years. (F) Doner

C241. Advanced Soil Chemistry. (2) Two hours of lecture per week. Prerequisites: Chemistry 150A or equivalent. Trace element chemistry and adsorption mechanisms to soil materials, organic-mineral interactions, and application of chemical thermodynamics to soil systems. Offered odd-numbered years. (F) Doner

C242. Surface and Colloid Chemistry of Natural Particles. (3) Three hours of lecture per week. Prerequisites: 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) Sposito

C246. Advanced Topics in Biometeorology and Micrometeorology. (2) Two hours of lecture per week. Prerequisites: 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 interpreting flux measurements. Information and theory on big-leaf, two-layer, and multi-

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layer models that couple energy, water, and carbon to predict trace gas fluxes are presented. How models integrate information from leaf to canopy to landscape scales is discussed. (SP) Baldocchi

238. Special Topics and Advanced Seminars in Plant Pathology. Course may be repeated for credit.

241. Insect Population Ecology. (2) Two hours of lecture and discussion per week. Prerequisites: 114, Math 164-168, or consent of instructor. Population dynamics, regulation, and mensuration, theory of natural control. Emphasis on models in population ecology relevant to insect population ecology and integrated pest management. (SP) Gutiérrez

248. Special Topics and Advanced Seminars in Entomology. Course may be repeated for credit.

248A. Research Reviews in Comparative Virology. (1) One hour of lecture per week. Reports and discussion of original research by staff and students. (F,SP)Volkman

248C. Seminar in Parasitology. (1) Two hours of seminar per week. Discussion on the advances in medical entomology/parasitology through individual presentations prepared by students. (SP) Lane

248E. Seminar in Bio-organic Chemistry. (1) Three hours of seminar per week. A 3-hour seminar held once a week for graduate students to discuss the advances in insect bio-organic chemistry through individually prepared papers by students. (SP) Kubo

248H. Seminar in Insect Ecology and Biological Control. (1) Three hours of seminar per week. A 3-hour seminar held once a week for graduate students to discuss advances in insect ecology and biological control through individually prepared presentations by students. Offered odd-numbered years. (F,SP) Gutiérrez

2488. Seminar in Environmental Science, Policy, and Management. (1) Three hours of seminar per week. A 3-hour seminar held once a week for graduate students to discuss advances in environmental science, policy, and management through individually prepared papers by students. (SP) O'Hara

Resource Policy

250. Environmental History, Philosophy, and Ethics. (4) Three hours of lecture/discussion per week. Prerequisites: Upper division course in history or history of the natural sciences. A critical survey of classical and recent literature in the field of environmental history, philosophy, and ethics, with special emphasis on the American environment. Topics will include environmental historiography, theories of environmental history, and the relationships between environmental history, philosophy, ethics, ecology, and policy. Offered odd-numbered years. (F) Merchant

251. International Conservation and Development Policy. (3) Three hours of lecture/discussion per week. Prerequisites: Upper division course in international development. Changes in Third World rural economy, ecology, and environment and ways in which they influence development policies. Historical dimensions of Third World environmental problems. Changing patterns of rural production (especially food) and resource use; alternative theories of natural resource and socioeconomic development; linkages between socioeconomic and environment in agrarian change and development policy; technology and resource control; conservation and development problems. (SP) Gurevitch

252. Seminar in Forest and Wildland Resource Policy Analysis. (3) Course may be repeated for credit. Three hours of lecture/seminar per week. The seminar addresses (1) methods of policy analysis for wildland resource management of analysis per week, and (2) processes of policy formation. It proceeds through these phases for a specific policy problem selected each year. (SP) Romm

253. Advanced Readings in Political Ecology. (4) Three hours of seminar per week. Prerequisites: Consent of instructor; significant background in social theory. Critique and comparison of literature in political ecology—an approach to sociological analysis of environmental change focusing on environmental conflict. Includes projects on political ecology, its origins, and the politics and discourses of natural resource management. Literature includes domestic and international research involving the combination of social and environmental history, local perspectives, and political economy to discuss accounts of social and environmental change. (SP) Peluso

254. Ecosystem Modeling. (3) Two hours of lecture and three hours of laboratory per week. Prerequisites: Calculus, probability and statistics, basic ecology, and consent of instructor. Techniques include descriptive analysis of ecological processes and patterns across a spectrum of spatial scales, spatial modeling and its applications to global change, and resource and environmental management. Basic modeling techniques of fundamental ecosystem processes, case analysis of representative models, and system simulation based on numerical techniques are emphasized. Offered even-numbered years. (F) Staff

255. Seminar in Sociology of Forest and Wildland Resources. (3) Three hours of lecture per week. Prerequisites: Consent of Instructor. Formerly 255. 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. Students will examine topics of individual interest to the management of wildland uses. Enrollment limited. Also listed as Geography C250. (F,SP) Fortmann

257. Seminar in Forest Economics and Management. (1) Course may be repeated for credit. One hour of seminar per week. Must be taken on a satisfactory/unsatisfactory basis. This seminar in workshop format features current research of faculty and doctoral students involving economic processes of tropical forests. Students will examine issues related to the management of wildland uses. Enrollment limited. Also listed as Geography C250. (F,SP) Gilless

258. 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

259. Transnational Environmental Politics and Movements. (3) Three hours of lecture and one hour of discussion per week. Prerequisites: Upper division course in environmental policy or social science. Contemporaneous issues in international environmental politics; impacts of globalization on the environment; comparative transnational environmental movements. Study of current and historical texts. Case studies drawn from around the world with a focus on the politics of conflict and resource fueling issues will also be addressed. (SP, F) O'Neill

260. 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. (F) Stephens

266. Seminar in Forest Ecology. (2) Course may be repeated for credit. Three hours of seminar per week. Must be taken on a satisfactory/unsatisfactory basis. A seminar dealing with selected topics in the ecology of forests. (SP) McBratney, Battles

268. Seminar in Range Ecology. (2) Course may be repeated for credit. Three hours of seminar per week. Prerequisites: Consent of Instructor. A seminar covering various aspects of range and wildlife management dealing with selected topics in ecology of rangelands. (F) Staff

271. Advanced Remote Sensing of Natural Resources. (3) Three hours of lecture/seminar per week. Prerequisites: 172, Statistics 20, or consent of instructor. A seminar covering various aspects of remote sensing dealing with selected topics in ecology of rangelands. (F) Staff

272. Ecosystem Management. (3) Three hours of lecture per week. Prerequisites: Basic ecology, microeconomics, and resource management. Examine major issues and approaches in ecosystem management. The course will include development of ecosystem approach, valuation of ecosystem commodities and services, assessment of ecosystem sustainability, simulation and prediction of ecosystem dynamics, decision-making methods, and ethical and institutional aspects. Particular emphasis is given to emerging conceptual frameworks and analytical tools. (SP) Staff

274. Case Studies in Forest Management. (1-8) Course may be repeated for credit. Minimum of four hours per week per unit. Hours to be arranged. Prerequisites: 117, 172, 187, or consent of instructor. Individual case studies involving the inventory, analysis, and management of forest resources. (F,SP) Staff

276. Advanced Silviculture. (2) Two hours of lecture per week. Prerequisites: 185 or equivalent. Advanced topics related to the dynamics and management of forest stands such as competition effects, mixed-species interactions, nutrient cycling, and management for old growth features, wood quality and aesthetics, and public and private interests. Field trips may be included. Offered odd-numbered years. (SP) O'Hara

278. Range Assessment. (3) Two hours of lecture per week plus four field trips. Prerequisites: Consent of instructor. A seminar course dealing with selected current topics in range ecosystem planning and policy. (F) Barton

279. Seminar on Pastoralism. (3) Two hours of lecture per week plus four field trips. Prerequisites: Consent of instructor. A seminar course dealing with selected current topics in range ecosystem planning and policy. (F) Barton

280. 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 current topics in range ecosystem planning and policy. (F) Barton

281. Seminar in Wildlife Biology and Management. (2) Course may be repeated for credit. Two hours of lecture/seminar per week. Prerequisites: 114 and 187. Reading, conference, and discussion. Reports and discussion of recent studies in wildlife biology and management. Open to qualified graduate students from other departments. (F) Staff

283. Wildlife Management Planning. (3) Three hours of lecture per week. Prerequisites: 187 or equivalent. A seminar course dealing with selected current topics in wildlife management planning. Students will prepare and present wildlife management plans for specific situations. Open to qualified graduate students from other departments. (SP) Bamford

284. Demographic Methods for Population Viability Analysis. (3) Three hours of lecture per week. Prerequisites: Graduate standing or consent of instructor. Application of demographic methods to the management of plant and animal populations. Conservation biology. Population processes of threatened and endangered species will be emphasized. Implications for life-history theory will also be discussed. Demographic analyses include (1) an understanding of life cycle diagrams, projection matrix, and age- and stage-based approaches; (2) calculation of population growth rate and sensitivity of demographic parameters to perturbation; and (3) advanced techniques of stochastic simulation modeling, spatial analyses, and population vi-
able analyses will be learned. Offered even-num-
bered years. (F) Beissinger

286. Physical Properties of Wood. (3) Three hours of lecture per week. Prerequisites: Consent of in-
structor. Formerly 286A. Absorption of water, non-
aqueous liquids, absorption of vapors and gases by wood. Structure of wood, distribution of aqueous solu-
tions, and nonaqueous liquids. Fluid flow including permeability and diffusion. Thermal properties with modes of heat transfer important in wood processing and usage. Offered odd-numbered years. (SP) Beall

287. Chemistry of Polysaccharides, Lignin, and Ex-
tractives. (3) Three hours of lecture per week. Prere-
quisites: Consent of instructor. Aspects of nomen-
clature, structures, biosynthesis, reactions, and distribution of terpenoids, fats, flavonoids, tannins, lignins, and polysaccharides, and related materials occurring in plant material, with em-
phasis on woody plant structures. Qualified under-
graduates may take this course. Offered odd-number-
ered years. (SP) Beall

288. Special Topics in Wood Science and Tech-
nology. Course may be repeated for credit. Prere-
quisites: Consent of instructor.

288A. Wood Chemistry. (1-3) Advanced study in wood chemistry primarily for advanced graduate students. (F,SP) Staff

288B. 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 stu-
dents. 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 ad-
vanced graduate students. (F,SP)

289A. Colloquium in Wood Science and Technol-
yogy. (1) Course may be repeated for credit. Two hours of seminar per week. Technical topics in wood science and technology. Staff and student research, guest sci-
tists, and technical reports. (F,SP)

289B. 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. Lecture, laboratory, 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, Pol-
cy, 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

296. Individual Study. (1-7) Course may be repeated for credit. Hours to be arranged. Must be taken on a satisfactory/unsatisfactory basis. 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. Four 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

Environmental Sciences

(College of Letters and Science and College of Natural Resources)

http://environmntalsciences.berkeley.edu

Program

Gregory Biging (Environmental Science, Policy, and Management)
Wayne Sousa (Integrated Biology)

Advisory Committee

James Bartolome (Environmental Science, Policy, and Management)
Ignacio Chapela (Environmental Science, Policy, and Management)
Timothy Duane (Landscape Architecture and Environmental Planning)
Louise Fortmann (Environmental Science, Policy, and Management)

Keith Giles (Agricultural and Resource Economics; Environmental Science, Policy, and Management)
Lynn Ingram (Geography)
James Kitchner (Earth and Planetary Science)
G. Mathias Kordoff (Landscape Architecture and Environmental Planning)
Vincent Resch (Environmental Science, Policy, and Management)
David Sedak (Civil and Environmental Engineering)
Whendee Silver (Science, Policy, and Management)
Brian Wright (Agricultural and Resource Economics)

Advisors: College of Letters and Science—Carol Snow, 349 Campbell Hall, (510) 642-2628, cas-
now@uclink4.berkeley.edu.
College of Natural Resources—Siska Philips, 260 Mulford Hall, (510) 643-9479, es-help@nature.
berkeley.edu.

Choice of College

Students can complete a major in environmental sciences in either the College of Letters and Sci-
ence for a Bachelor of Arts (B.A.) degree or the College of Natural Resources for a Bachelor of Sci-
cence (B.S.) degree. Major and breadth require-
ments are identical for all students, regardless of college. Please refer to the web site for the appro-
riate college for details. All students must com-
plete the L&S seven-course breadth requirements and essential skills requirements before graduation. Junior transfer students may satisfy these require-
ments by completing IGETC.

Major in Environmental Sciences

The environmental sciences major is supervised by an interdepartmental and intercollege faculty com-
mittee and is jointly administered by the College of Letters and Science and the College of Natural Re-
sources. The curriculum of the major emphasizes a broad and comprehensive education in the fun-
damentals of biology, chemistry, physics, and mathemati-
cs, and in social science directly related to environmental problems. Such training is indis-
pensable 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 rec-
ommendations for their avoidance or mitigation.

The environmental sciences major is concerned with interactions between human activities and bi-
ological 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 divi-
sion electives; most required courses, both lower and upper division, are virtually the same for each of the three emphases. Details of course require-
ments appear below.

The senior research seminar, Environmental Sci-
cences 196A-196B, in which students work inten-
sively 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 course work (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 av-
verage in courses taken for the major.

Declaring the Major—College of Natural Resources

Students in the College of Natural Resources may enter as freshmen into the environmental sciences major. Students wishing to transfer from another
Epidemiology / 261

Epidemiology
(School of Public Health, Interdepartmental Graduate Groups)

Department Office: 101 Haviland Hall, (510) 643-9612
Chair: Arthur Reingold, M.D.

Professors

Epidemiology

Nancy Adler, Ph.D. (University of California, San Francisco)
John Balmes, M.D. (University of California, San Francisco)
W. Thomas Boyce, M.D. (Public Health)
Richard Brand, Ph.D. (University of California, San Francisco)
Virginia Ernster, Ph.D. (University of California, San Francisco)
Brenda Eskensky, Ph.D. (Public Health)
Nicholas Jewell, Ph.D. (Public Health)
Bob Lane, Ph.D. (Entomology)
Ron Lee, Ph.D. (Demography)
Lorraine Minkin, Ph.D. (Public Health)
Nicholas Petrakis, M.D. (University of California, San Francisco)
Arthur Reingold, M.D. (Public Health)
Lee Riley, M.D. (Public Health)
William Saratani, Ph.D. (Public Health)
Mark Segal, Ph.D. (University of California, San Francisco)
Steve Selvin, Ph.D. (Public Health)
Ailen Smith, M.D. Ph.D. (Public Health)
S. Leonard Syme, Ph.D. (Public Health)
Ira Tager, M.D. (Public Health)
Gladys Block, Ph.D. (University of California, San Francisco)
Craig Steinmaus, Ph.D. (Public Health)
Joe Eisenberg, Ph.D. (Public Health)
Paul Williams, M.D., Ph.D. (Public Health)
Craig Iversen, Ph.D. (Public Health)
J. Michael Kipnis, M.D. (Public Health)
Lindann Stennert, M.D. (Public Health)

Clinical Professors

James Chinn, M.D., M.P.H. (Public Health)
Linda Neuhouser, Dr.P.H. (Public Health)

Adjunct Professors

George Rutherford, M.D. (University of California, San Francisco)
Paul Williams, M.D., Ph.D. (Public Health)

Clinical Professors

Joseph Eisenberg, Ph.D. (Public Health)
Cris Kupferman, M.D. (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 Division 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.

Field and laboratory studies of Strawberry Creek throughout its course from campus. Sophomore seminars offer opportunity for faculty to gain exposure to departments across the campus. Sophomore seminars are designed to teach skills of environmental research by biological, physical, and social scientists. The course is designed to teach skills necessary for majors to conduct independent research, the advanced senior seminar, 196A/196B. Topics include development of research projects. (F,SP)

Directed Group Study. (1-4) Course may be repeated for credit. Independent study. Must be taken on a term not passed basis. Prerequisites: Enroll in the Methods of Environmental Science. (4) Three hours of lecture per week. The weather and environmental conditions and features. This course is introductions to special techniques for characterizing environmental conditions and features. This course is designed to provide new students with the opportunity to develop competence. Doctoral dissertations set by Col-

Honors Program

To be eligible for honors, students must meet the minimum GPA established by their college. See Carol Snow (L&S) or Siskis Phipps (CNPR) for further details.

Lower Division Courses

10. Field Study in Environmental Sciences.

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 social components of science-based approaches to environmental management. (F) Berry, Konodoff

B prefix=language course for business majors
C prefix=hyphenated course
H prefix=honors course

R prefix=course satisfies R & R requirement
AC suffix=course satisfies American cultures requirement

*Professor of the Graduate School
†Recipient of Distinguished Teaching Award

198. Supervised Independent Study and Research. (1-4) Course may be repeated for credit. Independent study. Must be taken on a passed/not passed basis. Prerequisites: Enrollment is restricted by regulations listed in the General Catalog. (F,SP) Staff
The Group Major in Ethnic Studies

The group major in ethnic studies provides a core curriculum designed to develop a comparative and multidisciplinary understanding of the experiences and communities of African Americans, Asian Americans, Chicano, and Native Americans. Students majoring in ethnic studies study the history, culture, politics, and sociology 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 understanding 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.

Major Requirements

The major in ethnic studies consists of 12 courses for a total of 48 units.

Lower Division.

Ethnic Studies 10A, 10B: completion of one course in consultation with an advisor, in African American Studies, Asian American Studies, Chicano Studies, Ethnic Studies, Native American Studies, or an approved course from another department.

Upper Division.

Ethnic Studies 101A, 101B, and 102: completion of three courses from Ethnic Studies 100, 130AC, 141, 147, 150AC, or C173; completion of two courses from African American Studies, Asian American Studies, Chicano Studies, Ethnic Studies, Native American Studies, or an approved course from another department; Ethnic Studies 197 (4 units cumulative).

Honors.

The Department of Ethnic Studies provides a program leading to the A.B. degree with honors. Students will be recommended for honors if they have completed at least 32 units and two semesters with an average GPA of at least 3.3 for all work undertaken in the Department of Ethnic Studies and have been approved specifically for honors by the department chair upon recommendation by the faculty adviser for the group major. Honors students will be required to complete Ethnic Studies H196, Senior Honors Seminar for Ethnic Studies Majors. In order to graduate with an A.B. degree with honors, students must obtain at least a 3.3 GPA for all course work undertaken at the University.

The Minor

Requirements. The minor in ethnic studies consists of five upper division courses for a total of 20 units. Ethnic Studies 101A or 101B; completion of three of the six upper division courses listed in the major requirements (not including Ethnic Studies 101); completion of a course from African American Studies, Asian American Studies, Chicano Studies, Native American Studies, or an approved course from another department.

Lower Division Courses

10A. A History of Race and Ethnicity in Western United States, 1500-1950. Present. (4) Three hours of lecture and one hour of discussion per week. This course explores the role of “race” and ethnicity in the history of what became the Western United States from the Spanish conquest of the Southwest to contemporary controversies surrounding “race” in California. Rather than providing a continuous historical narrative, or treating each racialized “other” separately, the course works through a series of chronologically organized events in which issues of racial differences played key roles in creating what became a western identity. (F) Staff

10B. Theories and Concepts in Comparative Ethnic Studies An Introduction. (4) Three hours of lecture and one hour of obligatory discussion per week. This explores the work of key theorists of race, ethnicity, and de-colonization whose work and ideas have formed the basis of scholarly work in the broad, interdisciplinary field of comparative ethnic studies. It is intended both to offer beginning students a ground in the ideas and methods they will encounter throughout their major, and to introduce names, texts, and concepts with which all majors should be familiar. (SP) Staff

20AC. Introduction to Ethnic Studies. (4) Three hours of lecture and one hour of discussion per week. Formerly 20. The University, its relationship to corporate structures, legislative bodies, community people, and specifically, Third World people will be analyzed. The University’s values will be critically examined. The history of ethnic studies programs in this country, their development, and, their struggles will be discussed. This course satisfies the American cultures requirement. (F) Staff

20AD. A Comparative Survey of Racial and Ethnic Groups in the U.S. (4) Three hours of lecture and one hour of discussion per week. Formerly 21. This survey course will focus on the historical experiences of Euro-Americans, African Americans, and Latinos, emphasizing the themes of migration and economic change since the late 19th century. Though the class will focus on the three groups, the course will also address salient features of the experiences of Asian Americans, Native American, and recently arrived immigrants in light of the themes of the course. Intra-group differences such as class and gender will be discussed. This course satisfies the American cultures requirement. (SP) Staff

24. Freshman Seminar. (1) Course may be repeated for credit as topic varies. One hour of semester per week for fifteen weeks. Sections 1-2 to be graded on a passed/not passed basis. Sections 3-4 to be graded on a letter basis. Prerequisites: Consent of instructor. Open to freshmen and sophomores only. Supervised community field study. (F,SP) Staff

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 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. (F,SP) Staff

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. Individual research on a topic which will lead to the writing of major paper. Regular meetings with the faculty sponsor. (F,SP) Staff

Upper Division Courses

100. Comparative Ethnic Literature in America. (4) Three hours of lecture per week. Analysis of how selected works (poetry, short stories, novels, drama, and oral literature) reflect African American, Chicano, Asian American, and Native American consciousness and experiences. (F,SP) 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 research design, forms of data, research presentation and analysis, and the ethical questions involved in doing research on communities of color. The course will emphasize presenting research in a clear, concise manner. (F,SP) Staff

41AC. A Comparative Survey of Protest Movements Since the 60’s. (4) Three hours of lecture and one hour of discussion per week. Formerly 41. An introduction to comparative, interdisciplinary study of African American, Chicano, Mexican American, and Asian American social and political struggles from 1960 to the present. The course traces the development of protest movements created by people of color in response to racial, class, gender, and political inequality in the history of U.S. politics and history. The course critically examines the internal and external factors contributing to the rise and fall of social and political movements and concludes with an analysis of the current conjuncture of race, ethnicity, culture, class, gender, and sexual preference in U.S. politics. 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 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 basis. Prerequisites: Consent of instructor. Open to freshmen and sophomores only. Supervised community field study. (F,SP) Staff

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manner, and students will be expected to do a re-
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 perspectives to the literary and cultural
productions of ethnic or minority communities in
the United States. It also involves the study of impor-
tant writings by Latin/o, Native American, African-American,
African, 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. (SP) Staff

103. Proseminar: Issues in the Fields of Ethnic
Studies. (4) Course may be repeated for credit
with consent of instructor. Three hours of seminar/discus-
sion per week. Prerequisites: Consent of instructor.
Designed primarily to give majors in Asian American
Studies, Chicano studies, Latin American studies, eth-
nic studies, and Native American studies elementary
training in theoretical approaches to the study of race
and ethnicity. Emphasis will be placed on writing and
discussion. For a precise schedule of offerings, see de-
department catalog during pre-enrollment week each
semester. (F) Staff

103A. Racialization and Empire. (4) (F,SP)
103B. Ethnicity and the Narrative. (4) Three hours of
seminar per week. (F,SP)

103C. Racialization and Contemporary Communities.
(4) Three hours of seminar per week. (F,SP)

103D. Immigration, Racialization, and Globalization.
(4) Three hours of seminar per week. (F,SP)

103E. Racialization, Gender, and Popular Culture. (4)
Three hours of seminar per week. (F,SP)

110. Narrative Writing. (4) Three hours of lecture per
week. Prerequisites: Consent of instructor. A writing
seminar designed to move students toward the narrative practices
that enrich ethnic identities in descriptive, historical, and
fictional stories. Staff

122A. Ethnicity and Race in Contemporary Amer-
ican Films. (4) Three hours of lecture per week.
Formerly 122T. The depiction of race and ethnic relations
in American films from the 1960s to the present. The
course covers independent features as well as main-
stream Hollywood studio films. This course satisfies the
American cultures requirement. (SP) Staff

126. Ethnicity, Gender, and Sexuality. (4) Three
hours of lecture and one hour of discussion per week.
Course focuses on the production of sexualities, sex-
ual identification, and gender differentiation across mul-
tiple discourses and locations. (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 con-
junction with a 3-unit 190 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. Se-
lected films show producers’ points of view and social-
critical stances. 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
diverse? What are the causes? This comparative study
of racial minorities and European immigrant groups ex-
amines selected historical developments, events, and
themes from the 17th century to the present. This
course satisfies the American cultures requirement. (F,SP) Staff

135A. Contemporary U.S. Immigration. (4) Three
hours of lecture per week. Formerly 135. The myth, re-
ality and history of U.S. immigration. This course dis-
cusses issues raised by the recent immigration in a
comparative, historical approach. An examination of
theories, politics, and policy of U.S. immigration re-
striction. This course satisfies the American cultures re-
quirement. (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 from Mexico and the U.S. to Brazil and other
cultural contexts. Special attention to race, ethnic, and
identity issues from woman-centered analysis and methodology. (F,SP) Staff

141. Political Rights in America. (4) Three hours of
lecture and one hour of discussion per week. Prereq-
quisites: Upper division standing with priority to Eth-
nic Studies majors. A critical and comparative analysis
of contemporary political issues affecting Mexican
American/Latina, Native American, Asian 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
introductory class in any of the Ethnic Studies programs.
Examines the history and contemporary situations of
Chicana/Latina, Native 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. People of Mixed Racial Descent. (4) Three
hours of lecture/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 as well as exploring the psychol-
ogy, sociology, literature, and cinema per-
taining to topic. This course satisfies the American cul-
tures requirement. (F,SP) Staff

159AC. The Southern Border. (4) Four hours of lec-
ture/discussion per week. Prerequisites: Upper division
standing. 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 re-
lations take place in a spatial and cultural dis-
sion, 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 Ge-
ography 198. (SP) Staff

191. Advanced Seminar in Comparative Ethnic
Studies. (4) Course may be repeated for credit
as topic varies. Three hours of seminar per week.
Prerequisites: Consent of instructor. In addition to class
meetings, 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 any
other component(s) the instructor feels will add value
of the course. Topics to be announced at the be-
nining of each semester. (F,SP) Staff

190A. Advanced Seminar in Ethnic 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 projects and any other
project which the instructor feels will add to the value
of the course. Topics to be announced at the begin-
nining of each semester. This course satisfies the Amer-
ican cultures requirement. (F,SP) Staff

195. Selected Issues in Comparative Ethnic Stud-
ies Research. (4) Course may be repeated for credit
as topic varies. Three hours of seminar per week.
Prerequisites: 20 or consent of instructor. Doing research
on issues in U.S. communities of color. Students will
examine theories of society and do research on topics
from different methodological perspectives. Issues will
vary from semester to semester. (F,SP) Staff

H196A-H196B. Senior Honors Seminar for Ethnic
Studies Majors. (3-3) Three hours of seminar per
week. Credit and grade to be awarded on completion
of sequence. Prerequisites: 195, consent of instructor,
3.3 GPA on all University work, and a 3.3 GPA in
all courses in the major. Research seminar for senior eth-
nic studies majors designed to support and guide the
writing of a senior honors thesis. For senior ethnic studies
majors who have been approved for the hon-
or's program. (F,SP) Staff

197. Field Study in Communities of Color. (1-3)
Course may be repeated for credit. Enrollment is re-
stricted; see the Introduction to Courses and Curricula
section of this catalog. Three hours of fieldwork per
week. Must be taken on a passed/not passed basis.
Prerequisites: Consent of instructor. Supervised community
field study. (F,SP) Staff

198. Supervised Group Study. (1-3) Course may be
repeated for credit. Enrollment is restricted; see the In-
troduction to Courses and Curricula section of this cat-
alog. Three hours of work per week. Must be taken on a passed/not passed basis.
Prerequisites: Consent of instructor. Group study of selected topics
which will vary from semester to semester. (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 Cur-
ricula 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 major
paper. Regular meetings with the faculty sponsor. (F,SP) Staff

Ethnic Studies Graduate Group

Group Office: 506 Barrows Hall #2570, (510) 642-6643
Chair: Jose David Salvidar, Ph.D.

Professors
Norma Alarcón, Ph.D. (Chicano Studies)
William M. Banks III, Ed.D. (African American Studies)
Kathryn Nakano Glenn, Ph.D. (Asian American Studies)
Charles Henry, Ph.D. (African American Studies)
Patricia P. Hilden, Ph.D. (Native American Studies)
Diana Herzog, Ph.D. (Ethnic Studies/Chicano Studies)
Eline H. Kim, Ph.D. (Asian American Studies)
Michael S. LaQuerre, Ph.D. (African American Studies)
Jose Saldivar, Ph.D. (Chicano Studies)
Sau-long C. Wong, Ph.D. (Asian American Studies)
Maria Barrera (Emeritus), Ph.D. (Chicano Studies)
Carlos M. Muñoz Jr. (Emeritus), Ph.D. (Chicano Studies)
†Ronald Takaki (Emeritus), Ph.D. (Asian American Studies)
Margaret Wilkerson (Emerita), Ph.D. (Native American Studies)

Associate Professors
Alfred Arteaga, Ph.D. (Chicano Studies)
Caroline Clute, Ph.D. (Chicano American Studies)
VeVe Clark, Ph.D. (African American Studies)
Ramon Gristinaqui, Ph.D. (Chicano/Chicana Studies)
Barbara Marz, Ph.D. (African American Studies)
Waldo Martin, Ph.D. (History)
John McKewhen, Ph.D. (Linguistics)
David Montejano, Ph.D. (Chicano Studies/Ethnic Studies)
†Richard Omji, Ph.D. (Asian American Studies)
Laura Perez, Ph.D. (Chicano Studies)
Alex M. Saragosa, Ph.D. (Chicano Studies)
Ula Taylor, Ph.D. (African American Studies)
Khari Um, Ph.D. (African American Studies)
L. Ling-chi Wang, M.A. (Asian American Studies)
Margaret Metivelle (Emerita), Ph.D. (Chicano Studies)

Assistant Professors
Nimachia Hernandez, Ed.D. (Native American Studies)
Nelson Maldonado-Torres, Ph.D. (Ethnic Studies/Chicano Studies)

Adjunct Professor
Robert Allen, Ph.D. (Ethnic Studies/African American Studies)

*Recipient of Distinguished Teaching Award
**Graduate of the Partner School

Ethnic Studies Graduate Group / 263
Affiliated Faculty: Please contact the graduate group office for current list.

Graduate Advisers: Prof. Sau-ling (Head), Prof. Alfredo Arteaga.

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, Chicano and Latino, 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 ethnic cultural 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 program, which means that its courses are taught, staffed, and 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 Asian American Studies, Chicano and Latino Studies, and Native American Studies) and the Department of African American Studies. The affiliated faculty is composed of faculty from on-campus departments 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,SP) 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) Three hours of seminar per week. 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,SP) Staff

203. Social Structures: Contemporary Theories and Methods. (4) Three 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,SP) 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,SP) 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. Prerequisites: 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)

296. Directed Dissertation Research. (4-12) 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. Prerequisites: Consent of instructor: A term paper required. (F,SP) Staff

601. Individual Study for Master’s Students. (4) Course may be repeated once 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: Appointment 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. Seminar presents a systemic approach to theories and practicals 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)

302. Professional Orientation. (2) One and one-half hours of seminar per week. Must be taken on a satisfactory/unsatisfactory basis. This seminar is intended to instruct new graduate students in the behavior of professional academics including research, teaching, and academic ethics. (F) Hilden

303. Professional Writing. (2) One and one-half hours of seminar per week. Must be taken on a satisfactory/unsatisfactory basis. This course trains graduate students in writing for professional purposes, such as preparing conference presentations, articles for publication in journals, applications for funding, prequalifying exam position papers, dissertation prospectuses, dissertation chapters, book prospectuses, job applications, etc. Students bring in drafts of their writing for intensive critique by the instructor and fellow students. (F,SP)

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 verbal 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 151).

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 in Film, a student must have attained 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. The levels of 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 preparatory work for the thesis, the film submitted as a document or example, it is expected that these will be 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).

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 concentrate on film within 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 for rigorous cross-disciplinary 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: minimum of three graduate seminars in film studies taken at Berkeley: Film Studies 200, Film Studies 240, and a graduate seminar cross-listed within Film Studies 240. Note: Independent study courses may not be used to fulfill this requirement. A member of the Graduate Group in Film Studies must be an unofficial 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 emphasis on reading of selected texts; written themes developed from class discussion and analysis of rhetorical strategies. Satisfies the first half of the Reading and Composition requirement. (F) 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 Composition 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 (R1A and R1B) 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. Pre-requisites vary from department to department and semester to semester. Enrollment limited to 15 freshmen. (F,SP) Staff

25A. The History of Film. (4) Three hours of lecture and three to four hours of laboratory per week. From the beginnings through the conversion to sound. In addition to the emphasis on the film, the course will conclude with an examination of the technology of sound conversion and examples of early sound experiments. (F,SP) Staff

25B. The History of Film. (4) Three hours of lecture and three to four hours of laboratory per week. Pre-requisites: R1A/25A or equivalent. The sound era through 1971. (F) Staff

28A. The Documentary Film. (3) Three hours of lecture and one hour of laboratory per week. Prerequisites: R25A or equivalent. An analysis of the development of the documentary film, including examples by Vigo, Dziga Vertov, Detlev Buck, Wiemann. (F,SP) Staff

28B. The Avant-Garde Film. (3) Three hours of lecture and one hour of laboratory per week. Prerequisites: R25A or equivalent. A survey of experimental film, including examples by Vigo, Duchamp, Leger, Buñuel, Clair, Dreyer, Brakhage, Peckinpah, Snow, Gehr, Framp ton, and Rainer. (F) 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 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 open to 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)

50. Introduction to Film Genre. (4) Three hours of lecture and one and one-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 traces the development of film from the first films of the 1890s to the 1970s, drawing on examples from American, European, Asian, and Third World cinema. (F,SP) Staff

70. Introduction to Film Genre. (4) Three hours of lecture and one to three hours of laboratory per week. The study of films categorized either by industry-identified genres (westerns, horror films, musicals, film noir, etc.) or broader interpretive modes (melodrama, realism, fantasy, etc.). (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 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 open to 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)

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, from an historical perspective, of major theorists of film. (F,SP) Staff

105. Senior Seminar. (4) Three hours of seminar and two hours of laboratory per week. Prerequisites: Senior standing; completion of all lower division requirements and two out of three of the upper division requirements: GPA of 3.4 or better in the major. Intensive study of topics in film and moving-image media. (SP)

108. Special Topics in Film Genre. (4) Course may be repeated for credit. Three hours of lecture and three to four hours of laboratory per week. Prerequisites: Consent of instructor. Formerly C108. The study of a single categorized or interpretive genre. Selected topics in the study of film. (F,SP) Staff

135AC. Film of American Cultures. (4) Course may be repeated for credit as topic varies. Three hours of lecture and three to four hours of laboratory per week. Prerequisites: 25A or equivalent. Study of ethnic diversity of American film. The course will take substantial account of the films of three or more of the following groups: Africans Americans, African Americans, Chicano/Latinos, and European Americans. Topics vary from semester to semester. Students should consult the Program web page for the beginning of the semester for details. This course satisfies the American cultures requirement. (F,SP) 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. (F,SP) Staff

151. Auteur Theory. (4) Course may be repeated for credit. Three hours of lecture and three to four hours of laboratory per week. Prerequisites: 100 or equivalent. The works of a single director. (F,SP) Staff

160. National Cinema. (4) Course may be repeated for credit as topic varies. Three hours of lecture and one hour of laboratory per week. Prerequisites: Declared film major or consent of instructor. This course will focus on the cinema of a particular nation or region. (F,SP) Staff

180A. Screenwriting. (4) Three hours of lecture and one hour of discussion per week. Prerequisites: Consent of instructor. Formerly 180B. The course explores the art and craft of writing a feature-length, narrative screenplay. Participants present three story ideas to the class, develop one into a screenplay, and then work as a group to write and produce one detailed treatment and, write the first act of the script in professional screenplay form. The focus is on writing, with regular presentations of outlines and scripts to fellow writers. The emphasis is on story structure, character development, and screenplay form. (F,SP)

180B. Screenwriting. (4) Three hours of lecture and one hour of discussion per week. Prerequisites: Consent of instructor. 180A recommended. The course explores the art and craft of writing a feature-length narrative screenplay. Participants begin with a detailed outline of a narrative script and a portion of the script in proper form and develop it into a completed screenplay. The focus is on rewriting, with regular presentations of scenes to fellow writers. Participants also write
short scripts and explore alternative story structure. The emphasis is on characterization, scene structure, and storytelling. Students will learn about film bibliography and research methods. The 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., folktale, or in a particular area such as Russian folklore.

8. The Major

There is no undergraduate major in folklore.

9. 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 human expression which is handed down by tradition rather than by writing, it is related to all departments that deal with literature, art, music. Since folklore also deals with the traditional culture of mankind as manifested in customs and beliefs, it has close affilia-
tions with anthropology, design, history, linguistics, philosophy, psychology and sociology. Consequently, good undergraduate record in one of these disciplines is highly desirable though not necessarily required.

10. The Graduate Program

The requirements for the M.A. in folklore include 20 units, which at least 10 must be graduate level credits. In addition, 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 to the M.A. thesis may also be taken, provided the student satisfies the language requirement. Questions on the requirements for the M.A. in folklore should be addressed to the graduate adviser, Folklore Program, in 211 Kroeber Hall.

Field Study at the Pacific Film Archive. (2) Three hours of field work and one hour of group meetings per week. Must be taken on a passed/not passed basis. Prerequisites: Consent of instructor; film majors only.

Field Studies for Majors. (3) Course may be repeated for credit. Individual conferences with Faculty Sponsor and at least nine hours at field study. Must be taken on a passed/not passed basis. Prerequisites: Consent of instructor; film majors only.

Film Curating Internship. (2) Two hours of field work 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. Internning at Film Quarterly. Interns will gain practical experience and learn how to create a program of works by UC Berkeley students to present at PFA. Former spring semester. Students will solicit films and videos, preview them, and make a final selection as a group. Students will write short analyses of local film exhibition programs and will do projects related to PFA’s ongoing exhibition program.

Field Study at Film Quarterly. (2) Two hours of field work 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 practical experience and learn how to create a program of works by UC Berkeley students to present at PFA. Former spring semester. Students will solicit films and videos, preview them, and make a final selection as a group. Students will write short analyses of local film exhibition programs and will do projects related to PFA’s ongoing exhibition program.
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 Course Work. French 102; two courses chosen from French 185; two courses chosen from two different centuries (112-120); three electives. At least two of the upper division courses completed in fulfillment of French major course requirements must cover material focusing on the 18th century or earlier (historical period requirement).

Hons Program (H195A-H195B). 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 programs, 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 course work 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 120-139 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 Study
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, historiography, 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 historical coverage and to prepare students for the master’s exam. (Please note: The department does not admit students who intend to pursue only the M.A. degree.)

Upon completion of the M.A. phase, students must (1) take a minimum of six more courses, for a total of 14; (2) fulfill the foreign language requirement either through examination through the successful completion of two upper division or graduate courses in a foreign language (other than French) which has bearing on the students’ courses of study; (3) pass a written and oral qualifying examination in three areas of study based on the student’s interests and reading lists developed in consultation with faculty; (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 literature as a collateral field, and knowledge of a prescribed list of masterworks in a third Romance literature.

Plan II requires a detailed knowledge of French literature and philology, and the command of one broad integrated field (philology, modern literature) 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 structure 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 program.

Language requirement: Latin, French, Italian, and Spanish. Knowledge of German is recommended.

For more detailed information concerning these programs, students should consult the department.

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. This course is designed to fulfill the first half of the University’s reading and composition requirement. The primary goal of this course is to develop students’ reading and writing skills through a series of assignments that will provide the opportunity for the student to think about, analyze, and evaluate observations made in class discussions into coherent argumentative essays. Emphasis will be placed on the refinement of effective sentence, paragraph, and essay structures, and the development of fluency in oral and written expression as a process. Other goals in this course are to familiarize students with French literature and the specific questions that are relevant to this field. In addition, students will be introduced to different methods of literary and linguistic analysis in their nonliterary readings. (F,SP) Staff

1G. French for Graduate Students, Beginning. Three hours of lecture per week. Must be taken on a satisfactory/unsatisfactory basis. Preparation for graduate reading examinations in field of English and in all other disciplines. (F)

2. Elementary French. (5) Five hours of lecture and one hour of laboratory per week. Prerequisites: 1 or equivalent. Introduction to speaking, listening, reading, and writing in French. Continuation of French 1. (F,SP)

2G. French for Graduate Students, Advanced. Three hours of lecture per week. Prerequisites: 1 or equivalent. Preparation for graduate reading examination in field of English and in all other disciplines. (SP)

3. Intermediate French. (5) Five hours of lecture per week. Prerequisites: 2 or equivalent. Building on foundation established in first year, trains students in lis-
terning, reading, writing, and speaking French. Review and refinement of grammar. (F,SP)

4. Advanced Intermediate French. (5) Five hours of lecture per week. Prerequisites: 3 or equivalent. Advanced training in listening, reading, writing, and speaking French. Review and refinement of grammar. (F,SP)

13. Intermediate Conversation. (2) Three hours of lecture per week. Prerequisites: 2 or consent of Director of Lower Division. Intermediate French conversation. May not be repeated for credit. (F,SP)

14. Advanced Conversation. (2) Three hours of lecture per week. Prerequisites: 3 or 13 or equivalent. Advanced French conversation. This course may not be repeated for credit. (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 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 and semester to semester. Enrollment limited to freshmen. (F,SP)

35. Practical Phonetics and Listening Comprehension. (3) Three hours of lecture per week. Prerequisites: 3. This multimedia course concentrates on pronunciation and listening comprehension skills and provides a foundation for the study of the French language. Course Web site includes a wide variety of material—text, audio, video, authentic or specifically recorded for the course—an audio-visual sound chart, and a multimedia reference section. International phonetic alphabet and theoretical concepts are taught as necessary. Strongly recommended before study, work, or travel in French-speaking countries, particularly for Education Abroad Program students. Course required for French majors and minors in French Language Studies. (F,SP) Sorgen-Goldschmidt

39. Freshman/Sophomore Seminar. (2-4) 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 a wide range of campus departments; topics vary from department to department and from semester to semester.

43A-43B. Aspects of French Culture. (3-3) Three hours of lecture per week. Formerly 43. Various historical and aesthetic themes and problems in the development of French civilization. In English. (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 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: 3 or consent of instructor. Sophomore seminars are small interactive courses offered by faculty members in departments 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)

102. Reading and Writing Skills in French. (4) Three hours of lecture per week. Prerequisites: 4 (taken at Berkeley or an A or better, or consent of instructor) (may be taken concurrently with 103). An exploration of the ways words and images structure thought, communication and interaction of the subject and society. Development of reading and writing skills leading to correct and effective expression in French. (F,SP) Staff

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) Staff

112A. Medieval Literature. (4) Course may be repeated for a maximum of 8 units. One course from 112A-112B may be repeated once with a different topic and with consent of the Undergraduate Adviser. Three hours of lecture per week. Prerequisites: 102 or equivalent. Medieval literature from the Charlemagne to the Roman de la Rose. (F,SP) Staff

114A. Late Medieval Literature. (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 first half of the 16th century, in the context of the intellectual and aesthetic trends of the time, including humanism, evangelism, and the development of a new poetic language. (F,SP)

117A. Seventeenth-Century Literature. (4) One 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 various poetic movements of Marot, Ronsard, and its disciples are examined. Prerequisites: 102 or equivalent. Read and understand how concepts in Renaissance valuations, formulation of new concepts in philosophy and psychology, experiments with traditional forms in poetry, fiction, and the theatre.

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 Philosophe" and the development of libetine values as well as the emergence of the pre-Romantic aesthetics.

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, 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 topic varies. Three hours of lecture per week. Prerequisites: 102 or equivalent. Topics vary from year to year. Past topics have included "literature 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. (3) Three hours of lecture per week. Prerequisites: 102 or equivalent. Studies in 20th-century theatre. (F,SP)

126. 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. (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 correction of compositions, and occasional debates. (F,SP)

131A-131B. Translation and Debate. (4-4) Three hours of lecture per week. Prerequisites: 102 or the equivalent, or consent of instructor. In-depth knowledge of French language and accuracy in its use are the goals of this course. A textbook and systematic exercises will be used to assist in the demanding task of translating, both from English to French and from French to English. (F,SP)

137. French for Economics, Politics, and Business. (4) Three hours of lecture per week. Prerequisites: 102 or equivalent. Introduction to the French vocabulary and syntax specific to economics, politics, and business. Oral and written comprehension, written compositions (including correspondence), translations, training in oral expression. Conducted entirely in French. (F,SP) Sorgen

138. French for Future Teachers of the Language. (4) Three hours of lecture per week. Prerequisites: 35 and 36 or consent of instructor. For students planning to use their French in language teaching or related careers. In this course we will begin with a general account of the French language—its phonology, morphology, and syntax—and we will subsequently consider specific issues in the learning and teaching of French. We will also examine a variety of commonly used foreign language teaching methods. Students should have a working knowledge of both oral and written French. (F,SP) Kern

139. Creative Writing in French. (4) Course may be repeated for credit with a different topic; for Creative Writing minors only. Three hours of lecture per week. Prerequisites: 102 or equivalent. Develops students’ creative writing skills in French through analysis and discussion of techniques, experimentation with those techniques, and production of various literary genres. Enables students to explore the new possibilities for creativity and self-expression that are presented by writing in a foreign language. Weekly writing assignments using a process-based approach, including peer response, group work, and classroom collaboration. Discussion of literary texts to be read outside class, and weekly time spent on writing laboratory. Students will produce four polished pieces of creative writing. Contact will vary from year to year. (F,SP)

140B-140D. French Literature in English Translation. (4-4;4) Three hours of lecture per week. Major texts of French literature. Readings and writing assignments in English for non-majors; in French for French majors and minors. Class discussions in English.

A. The Middle Ages.
B. The Ancien Regime.
C. The Nineteenth Century.
D. Modern Literature. (F,SP)

145. History of the French Language. (4) Three hours of lecture per week. Prerequisites: 102 or equivalent. Formerly 132. Mainly devoted to "external" his-
Introduction to French Linguistics. (4) Three hours of lecture per week. Prerequisites: 102 or equivalent. Formerly 176A-176B. An introduction to the major branches of linguistic analysis (phonology, morphology, syntax and semantics) as applied to the French language. (F,SP)

Special Topics in French Linguistics. (4) Course may be repeated for credit as topic varies. 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)

147. Special Topics in French Linguistics. (4) Course may be repeated for credit as topic varies. Three hours of lecture per week. Prerequisites: 102 or equivalent. A study of brief texts from different periods to illustrate dialects, emergence of Parisian French as standard. (F,SP)

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) Three hours of lecture per week. Prerequisites: 102 or equivalent. An examination of certain major cultural concepts, such as “the Baroque” or “Romanticism,” in French cultural history. Topics vary from year to year. (F)

173. Linguistics and Literature. (4) Three hours of lecture per week. Prerequisites: 102 or equivalent; 146 or consent of instructor. The impact of linguistics on the theory of literature and the practice of literary criticism in recent years. (F,SP)

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)

175. 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 images and written texts. (F,SP)

177A-177B. History and Criticism of Film. (4) Four hours of lecture and four hours of studio per week. Prerequisites: 102 or equivalent; 170 or equivalent. The development of French cinema. Discussions, oral and written reports 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) Four 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) Three hours of lecture per week. Prerequisites: 102 or equivalent. Survey of French civilization: history, arts, and society, through the interpretation of literary texts. One course from 180A-180B-180C-180D is required for completion of the Option B French major. 180A: The Middle Ages; 180B: The Ancien Régime; 180C: The 19th Century; 180D: The 20th Century. (F,SP)

183A. Configurations of Crisis. (4) Course may be repeated for credit as topic varies. Three hours of lecture per week. Prerequisites: 102 or equivalent. A study of the pressures on artistic, political, and social structures at moments of crisis in French history. Problems of discontinuity in esthetic 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, exoticism, neo-civilization, the reaction of European countries to the discovery of Africa. (F,SP)

H195A-H195B. Honors Sequence. (2;2) Credit and grade to be awarded on completion of sequence. Prerequisites: Open to seniors majoring in French who meet the GPA requirements, with the consent of the advisor. Students will write an essay on a topic relating to French literature or culture under the supervision of a member of the faculty during two semesters of their senior year. (F,SP)

Field Studies. (1-4) Course may be repeated for credit. Two hours of fieldwork per week. Must be taken on a pass/fail basis. Prerequisites: Consent of instructor. Supervised field programs involving experiences in schools and school-related activities. Regular individual meetings with faculty sponsor and written reports required. (F,SP)

Supervised Independent Study and Research for Advanced Undergraduates. (1-4) Individual conferences. Must be passed/not passed basis. Prerequisites: Restricted to seniors with overall GPA of 3.0 and GPA of 3.0 in French. Enrollment restricted to students. Instructed in instruction only in areas not covered by courses. (F,SP)

French Music and Literature. (4) Three hours of lecture per week. Prerequisites: 102 or equivalent. The study of a year from 161A-161B may be repeated once for credit with a different topic and with consent of the instructor. Three hours of lecture per week. Prerequisites: 102 or equivalent. A study of Quebecois culture and civilization: novels, films, society. (F,SP)

210A-210B. Studies in Medieval Literature. (4;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. (F,SP)

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;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. (F,SP)

230A-230B. Studies in 17th-Century Literature. (4;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.

240A-240B. Studies in 18th-Century Literature. (4;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.

250A-250B. Studies in 19th-Century Literature. (4;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.

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 storytelling tradition, the definition of traditional metaphor and imagery; idealization 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;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.

270A-270B. Literary Criticism: Recent Work in French. (4;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. Orients students to the varied field of French studies and prepares students for critical and research skills necessary for advanced work in the field.

275. 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 topic.

288. Special Study. (1-4) Course may be repeated for credit. Individual conferences. 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. Reserved for

**Professor of the Graduate School**

**Recipient of Distinguished Teaching Award**
Gender and Women's Studies
(College of Letters and Science)

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http://socrates.berkeley.edu:/4047
Chair: Barrie Thorne, Ph.D., (510) 643-2513

Professors
Norma Alarcon, Ph.D. University of Indiana. Latin American, Chicano, and Pueto Rican literature; creative writing; women writers (Ethnic Studies, Chicano Studies, Spanish and Portuguese)
Wendy Brown, Ph.D. Princeton University. Feminist theory, history of political theory, contemporary critical theories of law and jurisprudence, and 20th-century continental theory, poststructuralism
Judith Butler, Ph.D. Johns Hopkins University. Feminist theory, sexuality studies, 19th- and 20th-century continental philosophy; philosophy and literature, social and political thought (Rhetoric, Comparative Literature)
Evelyn Nakano Glenn, Ph.D. Harvard University. Women of color in the U.S.; ethnic/racial/political conflict/space; qualitative methods; India, France

Associate Professor
Paolo Babettta, Ph.D. Sorbonne. Transnational feminist theories and practices; sexual and/or gender identities; cultural studies; reproductive and genetic technologies; transnational comparative studies; reproduction, population, biodiversity, and environment

Affiliated Faculty
Elizabeth Abel, Ph.D. (English)
Kathryn Abrams, J.D. (Law)
Alice M. Agogino, Ph.D. (Mechanical Engineering)
Emile C. Bermejo, Ph.D. (Spanish and Portuguese)
Daniel Boyarin, Ph.D. (Near Eastern Studies, Rhetoric)
Kari A. Britto, Ph.D. (French, Comparative Literature)
Kiren A. Chaudhry, Ph.D. (Political Science)
Pheng Cheak, Ph.D. (Rhetoric)
Heather Cheung, Ph.D. (English, Anthropology)
M. Cohen, Ph.D. (Anthropology, South and Southeast Asian Studies)
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)
Deniz Gokturk, Ph.D. (German, Film Studies)
Mark Griffith, Ph.D. (Film Studies)
Darcy Grimaldo Griswold, Ph.D. (History of Art)
Angela P. Harro, J.D. (Law)
Gillian Hart, Ph.D. (Geography)
Car Hayden, Ph.D. (Anthropology)
Carla Hesse, Ph.D. (History)
Percy Hintzen, Ph.D. (African American Studies)
Shannon Jackson, Ph.D. (Theater, Dance, and Performance Studies, Rhetoric)

Department Overview
The Department of Gender and Women's Studies offers interdisciplinary perspectives on the formation of gender and its intersections with other relations of power, such as sexuality, race, class, nationality, religion, and age. Questions are addressed within the context of a transnational world and 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 workings of power in social and historical life. The department offers an introduction to feminist theory as well as more advanced courses that seek to expand students' abilities for critical reading 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 transnational world, the politics of representation, feminist science studies, women, work, women, film and gender, 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 collaborate with an extensive group of extended faculty through the designated emphasis in women, gender, and sexuality, which provides graduate students across campus with a site for transdisciplinary learning and teaching. The department is now in the process of developing a Ph.D.-granting Graduate Group in Transnational Feminist Studies, which will involve faculty from a range of departments. The department fosters connections with scholars in feminist and sexuality studies throughout the campus by cross-listing courses, collaborating in research, and participating in the Gender Center, which links research and teaching units that focus on gender.

Major Program

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 on gender and women's issues (30-32 units) distributed as follows:

Core courses (20 units): 101, Doing Feminist Research; 102, Comparative Structures of Gender; 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 courses 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 3.5 for high honors, and a 3.7 for highest honors. In all cases, the senior thesis must be deemed excellent.
Minor Programs

Gender and Women’s Studies: Students in the College of Letters and Science may complete one or more minors of their choice, normally in a field beyond that of the major, but 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: 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 course studies course; and a history of sexuality course. In addition 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 gender 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 (DEWS) to their major programs. Designed to enhance interdisciplinary graduate studies at Berkeley, the DEWS provides curricular and research resources and opportunities to 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 campus (and major fields). Administered by the Department of Gender and Women’s Studies and the Graduate Group in Women, Gender, and Sexuality, the designated emphasis program provides students with advanced level gender and sexuality studies as well as a context for the interdisciplinary exchange of ideas and development of research.

Applicants will be selected according to their acaemic qualifications, the appropriateness of their interests to the program’s teaching resources, and the enrollment capacity of its graduate seminars. To be admitted to the program, applicants must already be accepted into an existing Ph.D. program at Berkeley (master’s students and students at other institutions are not eligible). Graduate students should apply in their third semester for admission to the program in their fourth semester. Students must apply before completing their qualifying examinations.

Students admitted to the designated emphasis program will be enrolled in the required introductory seminar (GWS 200) offered each spring. Students must fulfill the following requirements before completion of the degree: the introductory seminar (GWS 200), an elective seminar (GWS 210), and a dissertation research seminar (GWS 220). A member of the Graduate Group in Women, Gender, and Sexuality must be the qualifying examination committee; a topic on women, gender, and sexuality must be on the qualifying examination, and a member of the graduate group must be on the dissertation committee.

For more detailed information concerning this program, students are advised to consult the department.

Further Information

For further information, see the Schedule of Classes and the department’s course descriptions, which are issued before the start of each semester. The departmental publication, “Courses on Gender and Women,” provides detailed, up-to-date information about courses offered by the Department of Gender and Women’s Studies.

For further information about the department, events, and links to other sites of interest, go to http://womensstudies.berkeley.edu.

Lower Division Courses

R18. Reading and Composition. (4) Three hours of lecture and one hour of discussion per week. Formerly 18. Training and instruction in expository writing in composition. The readings and assignments will focus on themes and issues in 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. Three hours of lecture/discussion per week. Introduction to questions and concepts in gender and women’s studies. Critical study of the formation of gender and its intersections with other relations of power, such as sexuality, racialization, class, religion, and age. Questions will be addressed 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. The production of gender, sexuality, and processes of racialization in contemporary global political issues. Topics as geographic focus may vary. Examples: the post-9-11 situation in the U.S. and U.S. wars in Afghanistan and Iraq; Hindu-Muslim conflict in India; the wars in the former Yugoslavia and Rwanda; the Israel/Palestine situation; global right-wing movements; state and social movement terrorist and transnational “security” measures. (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 inequality and racial discriminiation in a globalizing world? The course examines (a) how supposedly “natural” differences are actually produced through everyday practices in particular spheres of life and across 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 conceptual and methodological approaches 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. Why study theory? How, and from where, does the desire to theorize gender emerge? What does theory do? What forms does it take? What is the relationship between theory and social movements? 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. (5) Three hours of seminar and two hours of discussion per week. Formerly 20W. This course is only open to students who have not completed the second half of the reading and composition requirement. This course is identical to two additional one-hour section meetings per week devoted to writing instruction, with additional writing assignments. Satisfies the second half of the Reading and Composition requirement. (F) Staff

C23AC. Foundations of American Cyber-Culture. (4) Six hours of lecture/studio per week. 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 we will work on will be the way both will reinforce preexisting social hierarchies and yet offer possibilities for the transcendence of those very categories. The new media—and we will leave the precritical definition of the new media to be argued over about the course of the semester—can be yet another means for dividing and disenfranchising, and can be the conduit of violence and transcendent dialogues. Also listed as C22AC. This course satisfies the American cultures requirement. (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. Seminars are offered in all campus departments; topics vary from department to department and topics vary from semester to semester. Enrollment limits are set by the faculty, but the suggested limit is 25. (F,SP) Staff

39. Freshman Sophomore Seminar. (3) Course may be repeated for credit as topic varies. Three hours of lecture per week. Formerly 39, offered as a lecture course. An 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) Staff

40. Special Topics. (3) Course may be repeated for credit. Three hours of lecture per week. Formerly 40. Lecture courses that investigate specific topics. (F,SP) Staff

50. Gender and Popular Culture. (3) Course may be repeated for credit. Three hours of lecture per week. A multi-disciplinary course designed to provide students with an opportunity to work with faculty investigating the topic of 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 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. Formerly 84W. Sophomore seminars are small interactive courses offered by faculty members in departments across the Berkeley 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 from 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. Must be taken on a passed/not passed basis. Seminars for the group study of selected topics not covered by regularly

B prefix=language course for business majors
C prefix=cross-listed course
H prefix=honors course
R prefix=course satisfies R&I requirement
AC suffix/course satisfies American cultures requirement
*Professor of the Graduate School
†Recipient of Distinguished Teaching Award

Gender and Women's Studies / 271
100AC. Women in American Culture. (3) Three hours of lecture per week. This course is designed to provide students with an opportunity to work with faculty investigating the topic Women in American Culture. This course also satisfies the American cultures requirement. (F,SP) Staff

101. Doing Feminist Research. (4) Three hours of lecture/discussion per week. Prerequisites: 10 and 20. In this course, students will learn to do feminist research using 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. Comparative Structures of Gender. (4) Three hours of lecture/discussion per week. The goal of this course is to analyze, through comparative and historical case studies, the systematic but variable ways gender, race, and sexuality structure social life. Attention will be given to economic, political, economic, and legal institutions. (SP) Staff

103. Identities Across Difference. (4) Three hours of lecture per week. Prerequisites: 10. The course studies identity as a product of articulation and investigation of self and other, rather than an inherited marking. Emphasis will be placed on the complexities of the lived experiences of women of color in the United States and in diverse parts of the world. (F) Staff

104. Feminist Theory. (4) Three hours of lecture/discussion per week. Prerequisites: 10. 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. Prerequisites: 10 and 20. Formerly 120. This course explores the range of women both in and behind the camera. It examines the socially constructed nature of gender representation in film and analyzes the political role of women as reified in the production and reception of film. Emphasis is on feminist approaches that challenge and expose the underlying work of patriarchy in cinema. (F,SP) Staff

125. Women and Film. (4) Three hours of lecture and two hours of screening per week. Prerequisites: 10 and 20. Formerly 104. This course explores the role of gender in cinema, film viewing, and the cinematic apparatus. It examines the socially constructed nature of gender, audience, and interpretation in relation to film size. It 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. (4) Three hours of lecture/discussion per week. Examines gender and embodiment in interdisciplinary 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, as sites of difference, fat or thin, commodifiable or inalienable. Considerations of masculinity and femininity in the contexts of bodies constrained, in leisure, at work, in nation-building, at war, and as feminist theory. (F,SP) Staff

130. Gender and Health. (4) Three hours of lecture/discussion per week. The role of gender in health is 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. Examines the socially constructed nature of gender, age identity, ethnicity, and embodiment. Emphasis on the gendered politics of childhood—for example, in the social regulation of reproduction; child-rearing, motherhood; teacher care, and rights; the changing global political economy of childhoods and various constructions of “the child”; child laborers, soldiers, street children; consumption by and for children; growing up in schools, neighborhoods, and families. (F,SP) Staff

139. Women and Work. (4) Three hours of lecture/discussion per week. Emphasis is on student participation, including readings, discussions, and analysis. Students will consider the conditions out of which the narrations are produced. Sites and subjects may vary from semester to semester. (F,SP) Staff

140. Feminist Cultural Studies. (4) Three hours of lecture/discussion per week. Prerequisites: Consent of instructor. This course introduces students to the interdisciplinary field of feminist cultural studies. Drawing on contemporary cultural and social assumptions and dynamics that shape the various images of African American women, an exploding field in American literary and African American writing. Course may be repeated for credit with consent of department. (F,SP) Staff

141. Interrogating Global Economic “Development.” (4) Three hours of lecture/discussion per week. Prerequisites: Consent of instructor. This course examines the political specific of the course will vary, but the emphasis will remain on the intersections of gender, race, nation, sexuality, and class in particular cultural and social practices. (F,SP) Staff

144. Alternative Sexualities in a Transnational World. (4) Course may be repeated for credit. Three hours of lecture/discussion per week. This course engages with debates about gender, race, sexuality, and transnational postcolonial subjects through genres such as autobiography, fiction, academic writing, film, journalism, and poetry. Each semester the focus is geopolitically limited to no more than two countries to allow students to consider the conditions out of which the narrations are produced. Sites and subjects may vary from semester to semester. (F,SP) Staff

C145. Interpreting the Queer Past: Methods and Interpretations of Methods in the History of Sexuality. (3) Five hours of lecture per week. Formerly 145. This course engages interpretive issues in studying the history of sexuality and the formation of sexual identities and communities. Considering primary documents, secondary literature, and theoretical essays, we will investigate specific historiographical concerns and raise questions about historical method and practice. Also listed as Undergrad Interdisciplinary Studies C145. (F,SP) Staff

C146. Cultural Representations of Sexualities: Queer Visual Culture. (4) Three hours of lecture/discussion per week. Formerly 146. This course examines modern literary cultures that construct ways of seeing diverse sexualities. Considering Western conventions of representation during the modern period, we will investigate film, television, and video. How and when do “normative” and “queer” sexualities become visually defined. Also listed as Undergrad Interdisciplinary Studies C146. (F,SP) Staff

C153A. 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: 10 and 20. Formerly 153A. Images of African American Women in Literature, 1870–1920. This course is for students to produce a research paper of three to five 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. Course explores the literature of 19th-century African American women, an exploding field in American literary discourse. Also listed as African American Studies C153A. (F) Staff

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, social, and cultural assumptions and dynamics that shape the image of the African American woman in contemporary Western African American writing. Also listed as African American Studies C153B. (SP)

155. Gender and Transnational Migration. (4) Three hours of lecture/discussion per week. What economic, social, and cultural forces impel women to migrate and shape their experiences as immigrants? How does gender, together with race/ethnicity and class, affect processes of settlement, community building, and into labor markets? This course examines gender structures and relations as they are reconfigured and maintained through immigration. It emphasizes 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. This course is designed to allow students to study one topic of interest to the community. This course fulfills the requirement of research paper. (F) Staff

H195. Women’s Studies Senior Honors Thesis. (4) Individual conferences. Prerequisites: 15 upper division units in Women’s Studies; 3.3 GPA in all University work and 3.3 GPA in courses in the major. Entails writing a bachelor’s honors thesis pertaining to the student’s major in Women’s Studies. Each student will work under the guidance of a faculty adviser who will read and grade the thesis. (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. Internship Program: Field work in an organization concerned with 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 work student completes by students that interprets the experience through diaries, historical reports, and creative work done for the organization. Faculty supervisor and student must agree on assignments. (F,SP) Staff

198. Directed Group Study for Advanced Undergraduates. (1-6) Course may be repeated for credit. Must be taken on a passed/not passed basis. Prerequisites: 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

199. Supervised Independent Study for Advanced Undergraduates. (1-6) Course may be repeated for credit. Must be taken on a passed/not passed basis. Prerequisites: Women’s Studies major. Reading and conference in a field that shall not be the same as that of any regular course and shall be specific enough to enable the student to write an essay based upon the student’s study. (F,SP) Staff

Graduate Courses

200. Theory and Critical Research. (4) Two to three hours of seminar per week. Prerequisites: Consent of instructor, 104, or the equivalent. This course will provide a cross-disciplinary examination of diverse feminist theories produced in different disciplines and across disciplines. The course will ground contemporary philosophical and theoretical developments in the study of gender specific histories of class, race, ethnicity, nation, and sexuality. Participants in the class will be urged to draw upon their own disciplinary and interdisciplinary backgrounds and interests to produce multifaceted analyses of how feminist theory has acted to delimit the study of women in some instances as well as how it may be used critically and imaginatively to open the field in complex and dynamic ways. Graduate students research and write a substantial (25-50 page) paper for the course. They will also participate in organizing and leading class discussion on a rotating basis. (F,SP) Staff

201. Advanced Interdisciplinary Studies. (4) Three hours of lecture and one hour of seminar per week. Prerequisites: 104 or equivalent and consent of instructor. A cross-disciplinary examination of specific problems in the study of gender, women, and sexuality. Topics will vary; for example, representations of motherhood, women in the public sphere, work and gender, globalization of gender, and the history of sexuality. (F,SP) Staff

202. Research Seminar. (3) Three hours of lecture and one hour of seminar per week. Prerequisites: Open to graduate students advanced to Ph.D. candidacy. Members of the seminar will present their ongoing dissertation research and mutually explore the interdisciplinary dimensions and implications of their work. (F,SP) Staff

239. Women and Work. (4) Three hours of lecture and one hour of seminar per week. This course explores women’s experiences of paid and unpaid labor in the household and the market. Historical, anthropological, economic, and sociological perspectives are brought to bear on issues such 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

241. Women and World Development. (4) Three hours of lecture and one hour of seminar per week. Prerequisites: Consent of instructor. This course will examine women’s lives developing countries and the impact of development programs and modernization, women as rural and subsistence urban micro-entrepreneurs, and the efforts of the women’s movement to change both the theory and practice of development. (F,SP) Staff

299. Individual Study and Research. (1-9) Course may be repeated for credit. Regular meetings to be arranged with instructor. Prerequisites: Consent of instructor. For individual research and study. May not be substituted for available graduate lecture courses. (F,SP) Staff

Geography

(College of Letters and Science)

Department Office: 507 McCone Hall, (510) 642-3903
Student Services Office: 517 McCone Hall, (510) 642-3904
http://geography.berkeley.edu/
Chair: Michael J. Watts, Ph.D. (510) 642-0276
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Professors
Kurt Cuffey, Ph.D. University of Washington.
Paleoclimatology, glacial landforms, river mechanics and fluvial environment
William E. Dietrich, Ph.D. University of Washington. Hillslope and fluvial geomorphology
Louise P. Fortmann, Ph.D. Cornell University. Property, poverty, gender, community natural resource management
Paul E. Grout, Ph.D. University of California, Berkeley. Cultural landscape studies, architectural history, the United States
Gillian Hart, Ph.D. Cornell University. Development theory, agrarian and regional studies, labor, gender
Michael Johns, Ph.D. University of California, Latin America, development issues, urban
Beatrix Manz, Ph.D. New York, Latin America, human and political geography
Allen Pred, Ph.D. University of Chicago. Social theory, local and regional transformation, culture and power
Harley Shaiken, B.A. Wayne State University. Skill formation, training and organizations and global production
Richard A. Walker, Ph.D. Johns Hopkins University. Urban and economic geography, California, United States
Michael J. Watts, Ph.D. University of Michigan. Agriculture, rural development, Africa
Carol Page, Student Affairs Officer; Maryland, environmental science, urbanization/land use change
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Graduate Faculty
Peng Gong, Ph.D. University of Waterloo. GIS theory, techniques and application; remote sensing image processing, analysis, and application
Patrick Kirch, Ph.D. Yale University. Environmental archaeology, prehistory, Pacific Islands
Jean Leigh, Ph.D. Harvard University. Physical geography, social practice theory, situated politics of science and everyday life
Jenifer R. Lees, Ph.D. University of British Columbia. (Landscape Architecture) Geographical information systems in landscape analysis and environmental planning

Affiliated Faculty

Major Adviser; Carol Page, Student Affairs Officer; Graduate Adviser; Gillian Hart.

Department Overview

The Department of Geography provides a broad-ranging perspective on humans as inhabitants of Earth, both as transformers of nature and as the social actors in the complex social processes that have created an environmental bridge between the natural and human sciences and an interdisciplinary link among the social sciences and humanities through its concern with space and scale. As geographical 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 will 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 and variability, glacial and riverine environments, terrestrial biogeochemistry, paleoecology, Quaternary stratigraphy, atmospheric physics and chemistry, and paleoenvironmental reconstruction. In addition, geographic information science and GIS research blends a rigorous understanding of process with curiosity about large-scale geographical phenomena.

(2) Development and Environment is concerned with the spatial scales and modes of production, 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 significance, and the history of environmental thought.

(3) Local and Global Relations is concerned with the interaction of global geographies with 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 research minds. We welcome students from a variety of backgrounds, including those with professional experience who wish to deepen their education. Students are encouraged to range freely through the curriculum and to follow
their inspiration where it leads, working in tandem with faculty advisers. 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 three pairs: 30 or C134, 135 or 70AC, 4 or 20. (Transfer students should consult with the undergraduate advisor 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.


II. The Local-Global Option: Geography 104, C107, 110, 111, 120, 121, 122, 125, 150, 151, 152, 153, 156, 157, 158, 159AC, C160A-C160B, 161, 162, 163, 164, 167, 168, 170, 175*, 177.

III. The Physical-Environmental Change Option: Geography 109, 134, C136, 139, 140A, 140B, C141, 142, 143, 144, C145, 148, 171, 175, 180.*

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 one month before the qualifying exam.*

The qualifying exam (the "orals") must be taken by the end of the third year, although it is recommended that the student choose the advisor's department and graduate from that department by the end of the second year. The exam is based on a discussion of three broad geographical fields built around bibliographies produced in consultation with the examining committee.**

Before starting dissertation research, each student must have a dissertation prospectus meeting—during which the 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. Members 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 the sixth year of enrollment.

*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

I. Global Environments. (4) Three hours of lecture and two hours of laboratory per week. The global pattern of climate, landforms, vegetation, and soils. The relative importance of natural and human-induced change, global warming, forest clearance, accelerated soil erosion, glacial/postglacial climate change and its consequences. Bye

II. World Peoples and Cultural Environments. (4) Three hours of lecture and one hour of laboratory per week. Historical and contemporary cultural-environmental patterns. The development and spread of cultural adaptations, human use of resources, transformation and creation of human environments.

III. World Regions, Peoples, and States. (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 in comparative context. The most important interrelations between environment, economy, ethnicity, and the national identity and viability of states will be explored. Sayre

IV. Geographies of Race and Gender. (4) Three hours of lecture and one hour of mandatory discussion per week. What can gender contribute to our understanding of gender inequality and racial discrimination in a globalizing world? This course examines (a) how supposedly "natural" differences 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 contexts and their spatial historical geographies can help us think critically and constructively about questions of social change in the face of globalization. Also listed as Africana Studies C15 and Women's Studies C15.

Globalization. (4) Three hours of lecture and one hour of discussion per week. How and why are geographical patterns of employment, production, and consumption unstable in the contemporary world? What are the consequences of NAFTA, an expanded European Community, and post-colonial migration flows? How is global restructuring culturally reworked locally and nationally?

24. Freshman Seminar. (1) Course may be repeated for credit. Sections 1-3 to be graded on a letter grade basis. Sections 4-6 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.

30. The Ocean World. (4) Three hours of lecture and one hour of mandatory discussion per week. The course will be 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 course, we will explore the ocean world, its life, and its resources. This course will look at the ocean depths: including subaqua, submersibles, and satellites. Also listed as Earth and Planetary Science C30. Ingram

32. 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, 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 economy of development and underdevelopment. The course will be structured around three critical concepts: land, labor, and work. Also listed as Development Studies C10. (F) Watts

39. Freshman Seminar. Course may be repeated for credit as topic varies. Three hours of seminar per week. Prerequisites: Consent of instructor. Intensive reading and discussion seminar for freshman.

40. Global Environmental Change. (4) Three hours of lecture and two hours of laboratory per week. A survey of the processes and patterns controlling the global environment. An overview of the integrative processes that 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 temporal and spatial scales so as to enhance our capability to distinguish between natural and human-induced climatic, biotic, and physical changes. Chiang, Cuffey, Rhee

50A. California. (4) Three hours of lecture and one hour of discussion per week. Formerly 150AC. California, the largest country in the world. Our most troubled country. "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 landscape have played a part, but the state's greatest resource has been its wealth and diversity of people, who have made it a center of technological and cultural innovation from Silicon Valley. Yet California has a dark side of exploitation and racialization of many peoples, and of violent efforts to exclude immigrants and control the poor. This course pursues classic themes in geography, such as regional difference, the transfor-
mation of nature, the space of cities, and the changing landscape. This course satisfies the American cultures requirement. Walker

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 role played by 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 C26.

70AC. The Urban Experience. (4) Three hours of lecture and one hour of mandatory discussion section per week. This course will track the historical evolution of the American city. We will 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. Johns

84. Sophomore Seminar. (1,2) Course may be repeated for credit. Three hours of seminar per week 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. Taught in a seminar format. A reading and research seminar for freshmen and sophomore students. Topics to vary.

103. History of Environmental Thought. (4) Three hours of lecture and one hour of discussion per week. Historical review of the development 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 interpretations of development and underdevelopment. Also listed as Development Studies C101. Hart


111. Local and Regional Transformation. (4) Three hours of lecture per week. The simultaneous transformation of localized activities, power relations, and identity. Theoretical issues pertaining to human agency and the simultaneous making of history and production of places. Detailed case studies from rural and urban settings, from the past and present, from North America, Europe, and the Third World.

C112. History of Development and Underdevelopment. (4) Three hours of lecture and one hour of discussion per week. Historical review of the development 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 interpretations of development and underdevelopment. Also listed as Development Studies C100. Hart

122. Carceral Geographies: Globalization and Social Justice. (4) Three hours of lecture per week. How does the study of contemporary prison expansion clarify our understanding of globalization, economic re-structuring, rural-urban bifurcation, state form, privatization, race, gender, and power? Why have prisons proliferated in capitalist communities and shopping malls? In this course, we will organize our inquiry in terms of geographical scale and undertake a joint fieldwork case-study of a post-1980 California prison town.

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? The role of natural resources in the world economy, national development and human welfare focusing on themes of scarcity and abundance, population growth, and migration, hunger and poverty. Sayre, Watts

133. Islands and Oceans. (4) Three hours of lecture per week. Physical and human geography of the sea. Oceanic islands and ecosystem; oceanic voyages and settlement of islands; cultural adaptations by seafaring societies; marine resources and envi-

134. Natural Hazards and Problems. (4) Three hours of lecture per week. An ecological approach to the study of interactions between the natural events and human use systems; perceptions of and adaptations to natural hazards such as floods, droughts, earthquakes, tornadoes, and volcanic eruptions.

136. Water in Terrestrial Environment. (4) Three hours of lecture per week. Prerequisites: Chemistry 1A, Math 1A-1B, or consent of instructor. Terrestrial environment including lower atmosphere, landscape, water, soil, geosages, and nutrient cycles. Hydrologic cycle. Precipitation, physiography, runoff, and erosion. Infiltration, evaporation, and transpiration. Ex-

140B. Physiography and Geomorphic Environments. (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 the physical landscapes and surface processes in environment. 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 equa-


140A. Physical Landscapes: Process and Form. (4) Four and one-half hours of lecture per week. Prerequisites: 136, or equivalent. In this course we review 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 act in concert with the underlying geodynamic framework to give shape to our planet’s landsca-

C141. Paleoclimatology. (4) Three hours of lecture and two hours of discussion per week. Discussion of the long-term and climatic changes that have been substantial throughout geologic history, and these changes constitute fascinating nat-

C142. Climate Dynamics. (4) Three hours of lecture per week and one or two computer laboratory projects. This course examines various components of the climate system—the atmosphere, ocean, land, and cryosphere—interact in determining its observed state.

B prefix=language course for business majors
C prefix=course satisfies R&Co requirement
AC suffix=course satisfies American cultures requirement
R prefix=course satisfies satisfies R&Co requirement
†Recipient of Distinguished Teaching Award
 spre"
143. Global Change and Biogeochemistry. (4) Three hours of lecture and one hour of discussion per week. Prerequisites: Chemistry 1A-1B or equivalent and either 40 or Environmental Science, Policy, and Management 2. The field of biogeochemistry offers an interdisciplinary approach to modern global environmental issues. Concepts and their effects, stratospheric ozone loss, oxygen capacity of the atmosphere, land use change, and marine ecosystem health. Earth is a complex system where the transformation of chemicals and energy 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 ocean, land, and 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 one hour of 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. Also listed as Chicano Studies C161. Manz

158. The Caribbean Region. (4) Three hours of lecture per week. The physical, cultural, political and socio-economic factors responsible for the diversity of the region and of peoples and landscapes. Topics include: The Caribbean Islands in the Western Hemisphere; a regional perspective, the physical geography, climates of the region, population, culture, and social structure.

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 border. South-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.

160A. 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

160B. American Cultural Landscapes, 1900 to Present. (4) Three hours of lecture and one hour of discussion per week. Continues the seeing and interpreting American histories and cultures, as revealed in everyday built surroundings—homes, highways, farms, factories, stores, recreation areas, small towns. In this course, six hours of laboratory per week. Problems include reading 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

163. Southeast Asia. (4) Three hours of lecture per week. Environment, culture, and development of mainland and insular Southeast Asia.

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 struggle, (3) the interplay of gender and class in the transitional society, and (4) Chinese Diaspora and business networks in the context of globalization. Each week the students will be expected to read selected references 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 to introduce undergraduate students with preliminary background in East Asian studies or development studies. Hsing

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.

167. The Middle East. (4) Three hours of lecture per week. The human geography of the Middle East, from Egypt to Afghanistan. Physical, historical, and cultural background to current social and economic problems of individual countries and the area as a whole.

169. The New Europes. (4) Three hours of lecture per week. The idea of Europe; processes of integration and disintegration; historical geography of the formation of nations and states; environmental problems; national identity; “Europe of regions”; transformation, conflict, and anxiety since 1989.

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.

171. Special Topics in Physical Geography. (3) Course may be repeated for credit as topic varies. Three hours of lecture per week. This course is designed to provide a vehicle for instructors to address a topic in physical 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.

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, bio- and physical geography, and California landscapes, field experiment design, field data collection, analysis, and report writing. Also listed as Geology 180A and Environmental Design C169B. Three hours of laboratory per week. Problems include reading landscapes as records of past and present spatial and cultural dimensions, 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

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 make-up, and character. Focus on regional economic development, relations between the city and the countryside, and the process of urbanization should offer special insights into the nature of Latin American development. Johns

188. Geographic Information Systems. (4) Three hours of lecture, one hour of discussion, and two hours of laboratory per week. An introduction to the concepts of geographic information systems. Topics include rural development, ecological change, demography, migration, urban growth, agricultural development, and peasant economy.

189. History of Geographical Thought. (4) Three hours of lecture per week. Recurring themes, problems, approaches, and controversies in the evolution of geography from ancient times, but with most em-
phasis on the 19th and 20th centuries. Its place in knowledge, relations with other disciplines, and its image and role in various countries.

H195A-H195B. Honors Course. (1-4;1-4) Course may be repeated for credit. Hours are arranged. Prerequisites: Admission to Honors Program. Required for Honors Program. Students will write the thesis. One or two semesters, at the instructor’s option; if two semesters, credit and grade to be 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. Course may 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 will be 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 taken on a 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.

200A-200B. The Geographical Point of View. (4;4) Three hours of seminar per week. Prerequisites: Re- quired of all first year graduate students. The course has several goals. One is to give students a sound basis upon which to judge arguments. A second is to help students see, think, and write geographically—that is, to interpret the meaning 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 Practice, and the Environment. (4) Three hours of seminar per week. The relationship between societies and natural environments lies at the heart of human geogra- phical inquiry and has gained urgency as the rate and scale of transformation of our physical and human landscapes has 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 the social basis of environmental change must be studied as well. Recent developments in so- cial theory have much to offer environmental studies, while the latter has, in turn, exploded many formerly safe assumptions about how and what the social sci- ences and humanities ought to be preoccupied with. This seminar allows students to explore some classics in environmental thought as well as recent contribu- tions that put the field on the forefront of social knowl- edge today. Sayre

204. Geographic Research Methods and Theories. (4) Three hours of seminar per week. Prerequisites: Graduate standing. Analysis of geographic research methods. Special emphasis on field research and historical development or field-based studies in ge- ography and related disciplines. Consideration of ap- proaches and assumptions involved in various field re- search techniques. Research ethics, proposals and equipment. Written reports and discussion.

214. Development Theories and Practices. (4) Three hours of lecture and one hour of consultation per week. This course examines how concepts and the- ories of “development” have been produced, main- tained, used, and challenged in different regions of the world economy. It will offer a framework for analyzing how changing and contending models of development both reflect and shape social processes and practices. Hart

214. Development Theories and Practices. (3) Three hours of lecture/discussion per week. This course examines how concepts and theories of “de- velopment” have been produced, maintained, used, and challenged in different regions of the world econ- omy. It will offer a framework for analyzing how chang- ing and contending models of development both reflect and shape social processes and practices. Hart

215. Seminar in Comparative and International De- velopment. (4) Three hours of seminar and one hour of consultation per week. This seminar is designed for students interested in topics of comparative develop- ment, the organization of work, and access to resources in different regions of the world economy. Participants in the seminar will be expected to develop a research proposal and to participate actively in reading and responding to each other’s work. Hart, Hsing

241. Glaciology. (4) Three hours of lecture and one hour of consultation per week. Prerequisites: Calculus. A review of the mechanics of glacial systems, includ- ing formation of ice, research techniques, and glacial- palynologic agents and as participants in climate change. Also listed as Earth and Planetary Science C242. Cuffey

242. Earth Systems Science. (4) Course may be re- peated for credit with consent of instructor. Three hours of seminar and one hour of consultation per week. To develop an advanced understanding of global environmental problems, it is necessary to adopt the approach of Earth systems science (the modern physical geography). Earth is viewed as a complete, systems science. We will read and discuss one com- plete graduate-level Earth systems science text, with supplementary readings from the current research lit- erature. Student evaluation is based primarily on par- ticipation in discussion and quality of supplementary lit- erature reviews of selected topics. Chiang, Cuffey

243. Advances in Studies of Environmental Change. (4) Course may be repeated for credit. Three hours of seminar and one hour of consultation per week. This course will consist of review and discussion of recently published advances in environmental change research, with an emphasis on important ad- vances that are linked with global phenomena, whether at a watershed scale or planetary scale, or (2) integrative in nature (meaning they tie to- gether disparate elements to form a coherent view of the operation of earth systems). Cuffey

245. Topics in Biogeochemistry. (4) Course may be repeated for credit. Three hours of seminar and one hour of consultation per week. Weekly discussions will be held on recent topics in atmospheric, oceanic, and terrestrial biogeochemistry. Students will choose recent or influential papers in these disciplines and will be re- sponsible for presentations and participation in discus- sions. Sessions may also include roundtable dis- cussions with invited speakers. Rhew

246. Geomorphology of California. (4) Course may be repeated for credit. Seminar. Two major field trips of four days each with 12-hour days. Prere- quisites: Graduate standing in either geography or earth and planetary science and consent of instructor. Undergraduates need consent of instructor and 140A-140B or Earth and Planetary Science 117. Numerous tectonic and Earth surface processes act in concert to produce the physical landscapes of our planet. This course examines three major regions of California (the Sierra Nevada, the Basin and Range, and the Southern Coast Ranges) as specific case studies for determining how landscapes can be under- stood using concepts from tectonics, geomor- phology, and geography. Two four-day field trips and preparatory readings for the first year of the inte- grated action of tectonics, geologic structure and litho- logy, drainage network development, hydrologies, soil production, hillslope transport, fluvial transport, aeolian processes, and glacial processes. A term pro- ject will be required. Cuffey

247. Geologic 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 the formation and com- position of marine sediments, sea level change, ocean sediments, marine stratigraphy, and ocean floor re- sources. Also listed as Earth and Planetary Science C246. Ingram

248. Introduction to Field and Laboratory Methods in Earth System Science. (4) Course may be re- peated for credit with consent of instructor. Three hours of lecture per week, plus weekly laboratory vis- its or fieldtrips. Earth system science is an interdisci- plinary field that probes the interaction between the at- mosphere, biosphere, lithosphere, and hydrosphere. This class will introduce essential laboratory and field- based research techniques. Field methods include material collection, 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. Rhew.

250. Seminar in Sociology of Forest and Wildland Resources. (3) Three hours of lecture per week. Prere- quisites: Consent of instructor. Formerly 250. Indi- vidual projects and group discussions concerning so- cial constraints to, or effects of, natural resource planning and management. Application of sociological theories to problems of managing wildland ecosys- tems. Students will examine topics of individual interest related to the management of wildland uses. En- rollment limited. Also listed as Environ Sci, Policy, and Management C255. (F Fortmann

251. 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.

252. Topics in Economic Geography. (4) Course may be repeated for credit. Three hours of seminar per week. Research seminar on selected topics in eco- nomic geography. Shaken, Walker, Watts

253. Topics in Urban 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 urban geography. 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

256. Topics in Historical 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 historical geography. Walker

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 re- peated 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 Quater- nary Paleoecology. (4) Three hours of seminar/lab- oratory per week, plus outside field work. Formerly In- terdepartmental Studies 260. Recovery of sediment
295. Geography Colloquium. (1) Presentation of graduate research in progress.

296. Oceans and Coasts. (4) Course may be repeated for credit. Integration and disintegration; homelands and territoriality; identities—primordial or “imagined”; malignant or beneficial nationalisms; “Europe of regions,’’ transformation and anxiety in the 1990s.

280. Advanced Field Study in Geography. (3-7) Course may be repeated for credit. Three hours of seminar and one hour of consultation per week. Research seminar on selected topics in geographic science.

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280. Advanced Field Study in Geography. (3-7) Course may be repeated for credit. Three hours of seminar and one hour of consultation per week. Research seminar on selected topics in geographic science.

294. Departmental Research Seminar. (1) Course may be repeated for credit. One hour of seminar per week. (One-half hour of presentation followed by one-half hour of discussion.) Must be taken on a satisfactory/unsatisfactory basis. An informal seminar for the presentation of graduate research in progress.

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. In-depth lectures on current research and field work. (F,SP)

296. Directed Dissertation Research. (1-12) Course may be repeated for credit. Must be taken on a satisfactory/unsatisfactory basis. Prerequisites: Advancement to Ph.D. candidacy. (F,SP)

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.

298. Directed Study for Graduate Students. (1-6) 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.

299. Individual Research. (1-8) Course may be repeated for credit. Individual research for graduate students in consultation with staff member. (F,SP)

601. 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, and microscopic charcoal. Pollen and seed identification, photomicroscopy, charcoal scanning. Statistical analysis and graphical presentation of data.

264. Nationalism, Identity, and Territoriality in Europe. (4) Course may be repeated for credit. Integration and disintegration; homelands and territoriality; identities—primordial or “imagined”; malignant or beneficial nationalisms; “Europe of regions,’’ transformation and anxiety in the 1990s.

266. Oceans and Coasts. (4) Course may be repeated for credit. Integration and disintegration; homelands and territoriality; identities—primordial or “imagined”; malignant or beneficial nationalisms; “Europe of regions,’’ transformation and anxiety in the 1990s.

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erature and culture and/or linguistics and is designed to encourage students to develop intellectual independence and creative initiative.

1. Doctor of Philosophy: Literature and Culture. The department offers an interdisciplinary program with a wide array of approaches to literature and culture. Candidates for the Ph.D. in German literature and culture should have advanced cultural competence in German, a thorough knowledge of, and sound judgment in, German literary, cultural, and intellectual history, a working familiarity with various critical approaches to these fields, and the ability to pursue original research and to argue their ideas convincingly both in English and in German. Students follow the German courses.

**Language requirements:** a reading knowledge of two foreign languages other than German, or advanced cultural competence in one foreign language other than German.

2. Doctor of Philosophy: Linguistics. An M.A. in German linguistics or its equivalent is a prerequisite for admission. Students are expected to conduct their graduate research in one of the following areas: phonetics; phonology; syntax; morphology; semantics; pragmatics; discourse; cognitive linguistics; corpus linguistics; computational linguistics; psycholinguistics; and neurolinguistics.

**Language requirements:** a reading knowledge of two foreign languages other than German or native fluency in one foreign language other than German.

For more detailed information on the Ph.D. program in literature and linguistics, students should consult the German Department’s “Information Sheet for Graduate Students.”

### 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 language, history, and culture of the Netherlands offered by the Department of German follow the German courses.

#### German

**Lower Division Courses**

1. Elementary German. (5) Five hours of lecture per week. Four of the weekly class meetings will be conducted in German, a broad-based introduction to the language and culture in English. Students develop the basic elements of communicative competence in both spoken and written language within a cultural framework. (F,SP) Staff

2. 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

3. Elementary German. (5) Five hours of lecture per week. Prerequisites: 1 or equivalent. Students continue to develop the basic elements of communicative competence in both spoken and written language. (F,SP) Staff

4. Elementary German for Graduate Students. Five hours of lecture for seven and one-half weeks. Must be taken on a satisfactory/unsatisfactory basis. Prerequisites: Completion of German 1. (F,SP) Staff

5. Intermediate German. (5) Five hours of lecture per week. Prerequisites: 1 or equivalent. This course is designed to refine students’ oral communicative competence and their ability to read and write. General review of grammar. (F,SP) Staff

6. Advanced German. (5) Five hours of lecture per week. Prerequisites: 1 or equivalent. Students acquire oral communicative strategies to function in socially appropriate ways in authentic situations of language use. They learn 1) to read and understand literary and non-literary texts at a high level of interpretation and 2) to write in culturally appropriate ways. (F,SP) Staff

7. Theater Workshop. (5) Combination of class meetings and workshops for minimum of five hours per week. Prerequisites: 2 or equivalent. Theater option of German 4. (F,SP) Staff

8. 101. Introduction to Reading Culture. (3) Five hours of lecture and discussion per week. Prerequisites: Knowledge of German required. Close reading of texts of literary or cultural significance for our own. (F,SP) Staff

9. Directed Study. (1-2) Course may be repeated for credit. Hours to be arranged. Must be taken on a pass/no pass basis. Prerequisites: Consent of instructor. Independent study and research by arrangement with faculty. (F,SP) Staff

10. 102A-B. Reading and Composition. (4) Three hours of lecture per week. Prerequisites: Subject A or examination for 5A. Any A-level course for 5B. For other language, see course number 5A. The course is designed to introduce students to the central elements of the modern German literary, cultural, and intellectual currents, as well as an introduction to argumentation and analysis. Students will examine numerous issues and questions central to defining the complexity of modern German culture. RSA satisfies the first half of Reading and Composition requirement, and RS8 satisfies the second half. (F,SP) Staff

11. Elementary German Workshop. (10) Ten hours of lecture/ laboratory per week. The aim of the workshop is to provide students with a knowledge of basic German grammar and the faculty to speak, read, and write the language, skills normally acquired during two semesters. (F,SP) Staff

12. Directed Study. (1-2) Course may be repeated for credit. Hours to be arranged. Must be taken on a pass/no pass basis. Prerequisites: Consent of instructor. Independent study and research by arrangement with faculty. (F,SP) Staff

13. Advanced German Workshop. (10) Ten hours of lecture/laboratory per week. Prerequisites: 1 and 2 or equivalent. The aim of the workshop is to provide students with an advanced knowledge of German grammar and an advanced facility to speak, read, and write the language, skills normally acquired during the second year of language instruction. (F,SP) Staff

14. Freshman Seminar. (1) Course may be repeated for credit as topic varies. One hour of lecture per week. Three hours of seminar per week 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: Consent of instructor. Group study of a topic not regularly scheduled. Topics may be initiated by students under the sponsorship and direction of a member of the German Department’s faculty. (F,SP) Staff

15. 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
C113. Western Mysticism: Religion, Art, and Literature. (4) Three hours of lecture and one hour of discussion per week. Prerequisites: 101 or equivalent. Systematic study of elements of style and discourse in early modern written texts. Intensive writing practice and critical reading of texts. No midterm or final examinations. Required of all German majors. (F,SP) Staff

C114. Russian Literature. (3) Three hours of lecture/discussion per week. Prerequisites: 102 or consent of instructor. Readings in Russian and English. This course is intended for students who wish to improve their skills in reading, writing, and speaking Russian. We will work with texts that were particularly influential in Russia during the first half of the 20th century, regardless of when they were written. Segments of philosophical writings (Schopenhauer, Kierkegaard, Nietzsche, literary works (George, Rilke, Th. Mann) but also texts by scientists and journalists will be analyzed. Participants are expected to prepare several oral presentations and approximately one written assignment per week. No midterm or final examination. (F,SP) Hillen

C115. The Way into the Open. (3) Three hours of lecture per week. Prerequisites: 102 or consent of instructor. Readings in and discussion of Russian literature. This course is intended for students who wish to improve their skills in reading, writing, and speaking Russian. We will work with texts that were particularly influential in Russia during the first half of the 20th century, regardless of when they were written. Segments of philosophical writings (Schopenhauer, Kierkegaard, Nietzsche, literary works (George, Rilke, Th. Mann) but also texts by scientists and journalists will be analyzed. Participants are expected to prepare several oral presentations and approximately one written assignment per week. No midterm or final examination. (F,SP) Hillen

C116. Literary Theory. (3) Three hours of lecture per week. Prerequisites: 102 or consent of instructor. Readings in and discussion of Russian literature. This course is intended for students who wish to improve their skills in reading, writing, and speaking Russian. We will work with texts that were particularly influential in Russia during the first half of the 20th century, regardless of when they were written. Segments of philosophical writings (Schopenhauer, Kierkegaard, Nietzsche, literary works (George, Rilke, Th. Mann) but also texts by scientists and journalists will be analyzed. Participants are expected to prepare several oral presentations and approximately one written assignment per week. No midterm or final examination. (F,SP) Hillen

C117. Jewish Writers: The Untimely Philosopher. (4) Three hours of lecture and one hour of discussion per week. Prerequisites: 102 or consent of instructor. Readings in and discussion of Russian literature. This course is intended for students who wish to improve their skills in reading, writing, and speaking Russian. We will work with texts that were particularly influential in Russia during the first half of the 20th century, regardless of when they were written. Segments of philosophical writings (Schopenhauer, Kierkegaard, Nietzsche, literary works (George, Rilke, Th. Mann) but also texts by scientists and journalists will be analyzed. Participants are expected to prepare several oral presentations and approximately one written assignment per week. No midterm or final examination. (F,SP) Hillen

C118. Topics in Narrative. (3) Course may be repeated for credit as topic varies. 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

C119. Language and Power. (3) Three hours of lecture/discussion per week. Prerequisites: 102 or consent of instructor. Readings in and discussion of Russian literature. This course is intended for students who wish to improve their skills in reading, writing, and speaking Russian. We will work with texts that were particularly influential in Russia during the first half of the 20th century, regardless of when they were written. Segments of philosophical writings (Schopenhauer, Kierkegaard, Nietzsche, literary works (George, Rilke, Th. Mann) but also texts by scientists and journalists will be analyzed. Participants are expected to prepare several oral presentations and approximately one written assignment per week. No midterm or final examination. (F,SP) Hillen

C120. 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

C121. Western Mysticism: Religion, Art, and Literature. (4) Three hours of lecture and one hour of discussion per week. Prerequisites: 101 or equivalent. Systematic study of elements of style and discourse in early modern written texts. Intensive writing practice and critical reading of texts. No midterm or final examinations. Required of all German majors. (F,SP) Staff

C122. From 1800 to the Present. (3) Three hours of lecture/discussion per week. Prerequisites: Knowledge of German required. This course will reflect recent attempts to redefine the historical periods of German literature by taking account of the fact that 1800 was not the end of the Enlightenment but the beginning of the Revolution for the development of Weimar Classicism and early Romanticism. We will also look at the politically changed reception of German Classicism in the early 19th century, the change of perspective, and literary confrontation with the Revolution (Buechner, Weiss), Wilson

C123. From 1800 to the Present. (3) Three hours of lecture/discussion per week. Prerequisites: Knowledge of German required. This course will reflect recent attempts to redefine the traditional periods of German literature by taking account of the fact that 1800 was not the end of the Enlightenment but the beginning of the Revolution for the development of Weimar Classicism and early Romanticism. We will also look at the politically changed reception of German Classicism in the early 19th century, the change of perspective, and literary confrontation with the Revolution (Buechner, Weiss), Wilson

143. Friedrich Nietzsche: The Untimely Philosopher. (4) Three hours of lecture and one hour of discussion per week. Prerequisites: Knowledge of modern German required. Students will learn the fundamentals of High Middle High German grammar and will read selections from major narrative works of the High Middle Ages. Selections from major works from the 13th century. (F) Tennant, Largier

144. Jewish Writers: The Untimely Philosopher. (4) Three hours of lecture and one hour of discussion per week. Prerequisites: Knowledge of modern German required. Students will learn the fundamentals of High Middle High German grammar and will read selections from major narrative works of the High Middle Ages. Selections from major works from the 13th century. (F) Tennant, Largier

145. Jewish Writers: The Untimely Philosopher. (4) Three hours of lecture and one hour of discussion per week. Prerequisites: Knowledge of modern German required. Students will learn the fundamentals of High Middle High German grammar and will read selections from major narrative works of the High Middle Ages. Selections from major works from the 13th century. (F) Tennant, Largier

146. Jewish Writers: The Unordained Rabbi. (4) Three hours of lecture and one hour of discussion per week. Prerequisites: Knowledge of modern German required. Students will learn the fundamentals of High Middle High German grammar and will read selections from major narrative works of the High Middle Ages. Selections from major works from the 13th century. (F) Tennant, Largier

147. German Intellectual History in a European Context: Historical Figures and Contemporary Reflections. Three hours of lecture and one hour of discussion per week. Prerequisites: Knowledge of modern German required. This course will consider the influence of some of the major thinkers—Martin Luther, Immanuel Kant, and G.W.F. Hegel—on key issues in their thought, and on the reception and discussion of some of these issues in the German-speaking world. The course will examine major works in the development of German thought. We will study the thought of major thinkers in the German-speaking world and examine the works of key figures in the history of German intellectual history. We will focus on the reception and discussion of some of these important thinkers in the 19th and 20th centuries. The course will involve the study of philosophical, political, and economic issues in the context of their social, historical, and cultural contexts and will focus on a number of significantly different interpretive approaches to the study of these thinkers.

150. A Century of Extremes. (4) Formerly 150. The study of the history of the 20th century in the German-speaking world. The course will deal with three seminal thinkers: Walter Benjamin, known for his genial insights into the culture of modernism; Theodor Adorno, the versatile philosopher and aesthetic theorist of the avant garde; and Jurgen Habermas, the most influential German intellectual after World War II. (F,SP) Staff

151. 18th- to 20th-Century German Poetry. (3) Three hours of lecture/discussion per week. Prerequisites: Knowledge of German required. Major texts from the 18th through the 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. Analysis of literary texts 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 consider them in their social, historical, and cultural contexts and will focus on a number of significantly different interpretive approaches to his work.

157. German Intellectual History in a European Context: Historical Figures and Contemporary Reflections. Three hours of lecture and one hour of discussion per week. Prerequisites: Knowledge of modern German required. This course will consider the influence of some of the major thinkers—Martin Luther, Immanuel Kant, and G.W.F. Hegel—on key issues in their thought, and on the reception and discussion of some of these issues in the German-speaking world. The course will examine major works in the development of German thought. We will study the thought of major thinkers in the German-speaking world and examine the works of key figures in the history of German intellectual history. We will focus on the reception and discussion of some of these important thinkers in the 19th and 20th centuries. The course will involve the study of philosophical, political, and economic issues in the context of their social, historical, and cultural contexts and will focus on a number of significantly different interpretive approaches to the study of these thinkers.

158. Politics and Culture in 20th-Century Germany. Three hours of lecture/discussion per week. Prerequisites: Knowledge of modern German required. Major texts from the 18th through the 20th century. German poetry will be studied closely. Methodological questions regarding the interpretation of poetry in general will also be discussed. Staff

160. Facism and Propaganda. (4) This course will focus on the theory and practice of propaganda during the 12 years of the Third Reich. It takes a close look at the ideology the Nazis tried to transmit, the techniques of organization, and effectiveness of their propaganda. Challenging the idea of the total power of propaganda, it looks for the limits of persuasion and possible other reasons for which Germans might have decided to fol-
167. Cultural Criticism. (3) 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 in music and the visual arts. This course will cover the major topics of cultural criticism, concepts, and theories pertaining to the cultural identity of Eastern Europe, selected around a specific theme. Special attention will be paid to the cultural history of Germany 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 utopia and revolution, etc. (F,SP) Staff

170. History of the German Language. (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 from around 1900 in which sons and daughters explore and question their father’s involvement in the Third Reich. Texts and discussions in German. (SP) Seeba

176. German Cultural History in a European Context. (4) Course may be repeated for credit. Three hours of lecture/discussion per week. This course will be taught as a topics course; the content will change from semester to semester. It will cover the major topics, concepts, and theories pertaining to the cultural identity of Eastern Europe, selected around a specific theme. Special attention will be paid to the cultural history of Germany 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 utopia and revolution, etc. (F,SP) Staff

179. Special Topics in German. (3) Course may be repeated for credit. Three hours of lecture/discussion per week. Prerequisites: Knowledge of German may be required depending on topic. Topics will vary from semester to semester. See departmental announcements. Additional screening time may be required for film topics. (F,SP) Staff

185. Representations and Memory of the Holocaust in Film. (4) Three hours of lecture per week and three hours of film screening per week. Because of its enormity, the Holocaust has been viewed as an event that defies representation, yet it continually has been the topic of films in the postwar era. Focusing primarily on films produced in the United States, we will examine films from the 1940s to the 1990s for their representations of the Holocaust, focusing on works with memory and commemoration. (F,SP) Holub

186. Transnational Cinemas. (3) Three hours of lecture/discussion per week, plus weekly film screenings. This course will explore how experiences of migration, colonization, and incorporation on films in a transnational context can be used for developing skills for cultural analysis using gender and feminist theories. All readings in English. For specific topic contact German department. (F,SP) Staff

187. Cultural Criticism. (3) Three hours of lecture per week. Prerequisites: Knowledge of German required. The cultural criticism of Friedrich Nietzsche, Sigmund Freud, and Hannah Arendt will be examined. The implicit criticism in works by such authors as Thomas Mann, Franz Kafka, Else Lasker-Schüler, and Thomas Bernhard will be considered. Notions of the subconscious, identity formation, and societal responsibility will receive particular attention. Texts and discussion in German. (F) Kudszus

190. History of the German Language. (3) Three hours of lecture/discussion per week. Designed for undergraduates and graduate students interested in the history of the language of the newly united Germany, which transverses a rich linguistic legacy from the beginnings to the present. Much of this history of the language of the newly united Germany, which transverses a rich linguistic legacy from the beginning of the century to today, in- cluding works by Trakl, Benn, Bachmann, Sachs, Celan, and Brinkmann. A 20-page research paper will be part of the requirements for this course. Kudszus

196. “Vaeterliteratur”: 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 empha-

199. Supervised Independent Study and Research. (1-4) Staff

201D. 19th Century. (4) A study of major texts from the 19th century to explore the changing functions of the Hohenstaufen period but also includes representative works from the later 13th, 14th and 15th centuries. Intended for M.A. candidates but open to all students with a working knowledge of Middle High German. (F,SP) Tenannt, Largier

201B. 16th and 17th Century. (4) Recommended for M.A. candidates. (F) Tenant, Largier

201C. 18th Century. (4) An introduction to major works of late Enlightenment, Sturm and Drang, and Classi
cism to Schiller’s death. (F) Staff

201D. 19th Century. (4) A study of major texts from Novials to Fontane to explore the changing functions of the 19th century and its influence on modern German literature. (F) Staff

201E. 20th Century. (4) A critical overview of the major literary and intellectual currents of the modern pe-
der period from about 1910 to the present. We will explore how social and philosophical forces are expressed in representative literary and theoretical texts of that period and discuss the changing status and social func-
tion of literature in Expressionism, Dada, Fascism and Exile, after 1945 and in post-modernism. (F) Staff

205. Supervised Independent Study and Research. (1-4) Individual conference. Must be taken on a pass/no pass basis. Prerequisites: Open to students who have completed at least 15 units of upper division German with an average no less than B. (F) Staff

210. Studies in Medieval Literature. (4) Two hours of seminar and one hour of tutorial per week. The seminar will give a brief introduction to the history of Germanistik, draw attention to bibliographical and re-
tool resources, and examine the relationship between critical editions of modern authors, and familiarize students with Ger-
amistik as a profession in the U.S., and focus upon literary theory. Required of all M.A. candidates. (F,SP) Staff

210A. Age of Enlightenment. (4) Formerly 211A. Lit-	ery texts will be studied as historical documents il-

210B. 18th Century. (4) Two hours of seminar and one hour of tutorial per week. Staff

210C. 19th Century. (4) Two hours of seminar and one hour of tutorial per week. Staff

210D. 20th Century. (4) Two hours of seminar and one hour of tutorial per week. Staff
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

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

261. Myth and Metaphor: Patterns of Imagistic Thought. (4) Two hours of seminar and one hour of tutorial per week. Discussion of theories of myth and metaphor from Friedrich Schlegel to Hans Blumenberg and of the role of mythological patterns (e.g., Odysseus, Oedipus, Kassandra, Medea, Siegfried, Hermann, Wilhelm Tell, Rudolf von Habsburg) in German literary and intellectual history. Staff

263. Studies in Language. Three hours of seminar per week.

263A. The Process of Translating. (4) Questions of interpretation, meaning 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. Questions 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 abound and at times merge with each other. (F,SP) Kudszus

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 laryngeal theory and reconstruction. (SP) Rauch

273. Gothic. (4) Three hours of lecture/discussion per week. Study of the linguistic structures of the earliest Germanic dialects. 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 structure and 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 lecture and one hour of tutorial per week. The pre-history, emergence, development of Netherlandic, and its filiation with English and German. See also Dutch 107. Shannon

280. North Sea Germanic. (4) Three hours of seminar per week. Readings and discussion of poetic and prose texts in the Low German dialects of the North Sea region (e.g., Low Franconian, Middle Dutch, Old Frisian, Middle Low German. (F,SP) Shannon

282. Old Saxon. (4) Three hours of lecture/discussion per week. Study of the most provocative of the major Old German dialects in terms of structural identification. The literary and ethnographic setting of the Heliand and its shared isogloss. Rauch

285. Approaches and Issues in the Study of Modern German. (4) Two hours of seminar and one hour of tutorial per week. Prerequisites: 103. A survey of relevant contemporary issues and topics in linguistic research on the structure of German. Shannon

290. Seminar in German Linguistics. (4) Course may be repeated for credit. Two hours of seminar and one hour of tutorial per week. Variable topic. For specific topic contact departmental office.

291. Methods and Issues in German Morphology. (4) Two hours of seminar per week. The seminar will deal with the methods and results of morphological analysis as applied to the German language. It will introduce basic concepts and means of morphological analyses, as well as study and apply various theories of word structure to German. The primary concern will be the synchronic analyses of modern German word formation, but questions of a diachronic nature as well as ones about inflection will also be discussed. (SP) Shannon

292. German Syntax. (4) Two hours of seminar per week. Discussion of current syntactic theories as applied to a number of issues in modern German syntax with an eye toward their description and explanatory potential. Typological comparison, especially with English.

293. German Semantics. (4) Two hours of seminar per week. Concentration on the essential categories of semantic knowledge. The synchronic structure and the semantics of preverbalization, and the semantics of pathological language.

294. Contrastive Grammars. (4) Two hours of seminar per week. Theory and methods of contrastive linguistic analyses. Study of pairs of contrastive language sets in two time perspectives: Modern German with Modern English and Early New German with Early New English. Rauch

295. Dialectology. (4) Two hours of seminar per week. Discussion of the most provocative of the major dialects and results in the investigation of present-day German dialects. (F) Shannon

296. Semiotics. (4) Two hours of seminar per week. Discussion of the principal figures from the basic disciplines of philosophy, biology, and linguistics influential in current trends in semiotics. Application of Peircean semiotics to a wide range of semiotic modalities. Rauch

Group and Individual Study

298. Directed Group Study. (2-8) Course may be repeated for credit as topic varies. Seminar. Must be taken on a satisfactory/unsatisfactory basis. (F,SP) Staff

299. Individual Study for Graduate Students in Literature and Linguistics. (2-12) Course may be repeated for credit. Individual conference. Primarily for post-M.A. students engaged in exploration of a restricted field, involving writing of a report, and for students writing their doctoral dissertations. (F,SP) Staff

602. Individual Study for Doctoral Students. (4-8) Course may be repeated once for credit. Individual conference. Must be taken on a satisfactory/unsatisfactory basis. Prerequisites: M.A. in German. Independent study in consultation with graduate advisor to provide an opportunity for Ph.D. candidates to prepare for the qualifying examination. (F,SP) Staff

Courses in the Teaching of German

301. The Teaching of German in College: First Year. (3) Two hours of seminar per week. Prerequisites: Graduate standing. Required of all graduate student instructors, this course provides instruction on the theory and practice of foreign-language teaching and learning. (F) Newton

302. The Teaching German in College: Advanced First Year. (3) Course may be repeated for credit. Two hours of seminar per week. Prerequisites: Graduate standing. Required of all graduate student instructors. This course continues to provide instruction on the theory and practice of foreign-language teaching and acquisition. (SP) Newton

350. Seminar in Foreign Language Pedagogy: Teaching German College 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 observation of their teaching, and the final portfolio. (SP) Staff

Yiddish

Upper Division Courses

101. Yiddish for Advanced Students. (5) Five hours of lecture/discussion per week. Prerequisites: One year of German or Hebrew, or consent of instructor. Intensive introduction to Yiddish for students with experience in German or Hebrew. Attention to reading, writing, and speaking in the context of the historic Yiddish cultural environment. (F) Katz

102. Intermediate Yiddish for Advanced Students. (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 Yid-
Dutch

Lower Division Courses

1. Elementary Dutch. (5) Five hours of lecture and one hour of laboratory per week. Beginner’s course. (F) Van Deusen-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. Staff

110. Advanced Dutch. (3) Three hours of lecture per week. Prerequisites: 110 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. Major emphasis will be given to the Hebrew/Aramaic component. Selections may vary from semester to semester. (SP) Katz

160. Literature of the Lowlands in English Translation. (3) Three hours of lecture/discussion per week. Major research paper in the areas of Dutch literature, culture, or the area of linguistics. Required of all majors. (F.SP) Staff

162. The Modern Short Story in Holland and Flanders. (3) Three hours of lecture/discussion per week. Three hours of lecture discussion per week. Study of the major contemporary Dutch and Flemish writers and their works. (F.SP) Staff

163. Women Writers in the Netherlands and Flanders. (3) Three hours of lecture per week. Many of the most celebrated and critically acclaimed literary works from the Netherlands and Flanders will be studied in English translation. The works consist primarily of novels from the Middle Ages to the modern period, with special emphasis on the latter. (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 repels with works dealing with the Holocaust, by both victims and survivors. The course will focus on literary analysis of historical documents, examine the history of anti-Semitism in the Lowlands, and compare a number of literary genres from the Diary to eogo-documents and fiction. (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 will be organized around five larger themes: water management and environmental issues; language and education; art, literature, and culture; politics, religion, and social welfare; and social issues. (SP) Van Deusen-Scholl

179. Cultural Studies. (3,4) Three hours of lecture/discussion per week. One additional hour of discussion per week. Offerings vary. See departmental descriptions for current topic. All readings and discussions in English. (F.SP) Staff

190. Senior Thesis. (4) One 2-hour consultation per week. Major research paper in the areas of Dutch literature, culture, or the area of linguistics. Required of all majors. (F.SP) Staff

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 Alpehn

260. The Culture of Trauma. (4) Three hours of seminar per week. Course will focus on issues of trauma and cultural memory and the ways they manifest themselves in representation. This dual question will be repeated for a maximum of 3 units. Prerequisites: Advanced standing. (F.SP) Staff

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. Review of Jewish studies, readings of works by writers and visual artists. (F,SP) Katz

265. Women in the Netherlands and Flanders in English Translation. (4) Three hours of lecture plus one hour of consultation per week. In this course the modern short story will be studied in English, drawing from the work of writers between the 1950s and 1990s. Major emphasis will be placed on post-war Dutch literature. Staff

266. The Modern Short Story in Holland and Flanders in English Translation. (4) Three hours of lecture per week and one hour of consultation per week. The Netherlands has a long tradition of good women authors, many of whom have been on the vanguard of modern feminist writers. (F.SP) Staff

268. The Indonesian Connection: Dutch Literature about the Indies in English Translation. (4) Three hours of lecture and one hour of consultation per week. Perhaps the very best Netherlandic literature is that dealing with the Indies, for centuries a Dutch colony. Beginning with Max Havelaar (by Multatuli), a large repertoire of 20th-century “Dutch/Indonesian” novels will be covered. (F.SP) Staff

269. The Holocaust. (3) Course may be repeated for credit. Individual conference. Must be taken on a passed/not passed basis. (F.SP) Staff

H196. Honors Studies in Dutch. (1-4) Course may be repeated for a maximum of 3 units. Prerequisites: 110 or consent of instructor. Advanced grammar, written exercises, and an introduction to Dutch literature. (F) Staff

197. Special Studies in Dutch. (1-4) Course may be repeated for credit. One to four hours of seminar per week. Must be taken on a passed/not passed basis. Prerequisites: Overall G.P.A. of 3.0. Enrollment is restricted by regulations in 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 Alpehn

260. The Culture of Trauma. (4) Three hours of seminar per week. 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 the specific modes of reading that these issues require. This is the analytical component of the course. This course, thus, is theoretical, analytical, as well as historical. In addition, it is devoted to reading literature as well as visual art. Techniques of reading for traces of trauma and other subtle indications of an unspoken “pastness,” paired with a sensitivity to documentary forms of expression, will be practiced in readings of works by writers and visual artists. (F.SP) Van Alpehn

299. Individual Studies in Dutch for Graduate Students. (1-8) Course may be repeated for credit. Individual conference. For graduate students engaged in exploration of a restricted field, involving the writing of a research paper. (F.SP) Staff

AFRIKAANS

Upper Division Courses

150. Languages and Cultures of South Africa. (3) Three hours of lecture per week. Prerequisites: Knowledge of Afrikaans or Dutch recommended. The course will center on the role of Afrikaans in the history of South Africa and will explore the development of Afrikaans in relation to the many languages spoken in South Africa. Topics include the relationship between Dutch and Afrikaans, language contact and creolization, regional, and social variation within Afrikaans, nationalism and racial divisions, multilingualism in South Africa, language attitudes, and language policy and language planning in post-apartheid South Africa. (F) Van Deusen-Scholl

Health and Medical Sciences (Graduate School of Public Health)

Program Office: 570 University Hall, (510) 642-5479
Professor: W. Thomas Boyce, M.D.
Assistant 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 MCCO, M.D.
KENT OLOF, M.D.
ALAN STEINBACH, M.D.
DAVID TOVEL, M.D.
HARVEY WENSTEIN, M.D., M.P.H.
Associate Clinical Professors: HOWARD GRUBER, M.D.
BARRY LATER, M.D.
BALARAM PUGILLANDA, M.D.
Assistant Clinical Professors: JOHN COLLIN, M.D.
MARIO CORONA, M.D.
ROBERT FREEDMAN, M.D.
KENNETH GJELTA, M.D.
JAN HOFMANN, M.D.
BOWEN WANG, M.D.
Academic Coordinator: KEVIN MACK, M.D.
Lecturers: KATE DUN-COHEN, PH.D.
ERIK GAENSFLAHL, M.D.
SARA HARTLEY, M.D.
KAREN SOKAL-GUTIERREZ, M.D., M.P.H.
Adjunct Professor: ERIC STOVER, M.D.
Assistant Adjunct Professors: JEFFREY BURACK, B.PHIL., M.D., M.P.P.
SUZAN IVEY, M.D., M.H.S.A.
Visiting Professor: JENNIFER BRECKLER, PH.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 requirement.
course work 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 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 http://jmp.berkeley.edu.

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/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. Small seminars are offered in all department campuses, 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 up to 15 units. 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. Small seminars are offered in all department campuses, and 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 work per week per unit for five terms. 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. Small seminars are offered in all department campuses, and topics vary from department to department and semester to semester. (F,SP)

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—from the perspective of medicine and history. It seeks to confront the humanist with the quotidian realities of the medical practice and medicine’s historical and cultural context. It will confront the humanist with the quotidian realities of the medical practice and medicine’s historical and cultural context. (SP)

200A. History of Medicine. (3) Three hours of lecture per week. Students learn the neurologic, musculo-skeletal, ear, nose, throat, thyroid, and skin exam and practice the physical medicine and physical exam with their preceptor. The dynamics of the physician-patient relationship is discussed on an ongoing basis. Each student is required to turn in at least five patient write-ups per term. (F) Stevens, Swartzberg

200D. Clinical Skills 4. (2) Three hours of lecture/laboratory offered on 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 is discussed on an ongoing basis. Each student is required to turn in at least five patient write-ups per term. (SP) Stevens, Swartzberg

200E. Clinical Skills 5. (2) Three hours of lecture/laboratory offered on 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 is discussed on an ongoing basis. Each student is required to turn in at least five patient write-ups per term. (F) Stevens, Swartzberg

202A. Clinical Skills 1. (2) Two hours of laboratory per week. Must be taken on a satisfactory/unsatisfactory basis. Prerequisites: Graduate standing in HMS Joint Medical Program. Students learn the cardiovascular, pulmonary, and gastrointestinal exam and practice a complete medical history and physical exam with their preceptor. The dynamics of the physician-patient relationship is discussed on an ongoing basis. Each student is required to turn in at least five patient write-ups per term. (SP) Mico

202B. Clinical Skills 2. (2) Three hours of lecture/laboratory 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, thyroid, and skin exam and practice the physical medicine and physical exam with their preceptor. The dynamics of the physician-patient relationship is discussed on an ongoing basis. Each student is required to turn in at least five patient write-ups per term. (SP) Mico

200C. Clinical Skills 3. (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 neurologic, musculo-skeletal, ear, nose, throat, thyroid, and skin exam and practice the physical medicine and physical exam with their preceptor. The dynamics of the physician-patient relationship is discussed on an ongoing basis. Each student is required to turn in at least five patient write-ups per term. (F) Stevens, Swartzberg

200D. Clinical Skills 4. (2) Three hours of lecture/laboratory offered on 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 is discussed on an ongoing basis. Each student is required to turn in at least five patient write-ups per term. (SP) Stevens, Swartzberg

200E. Clinical Skills 5. (2) Three hours of lecture/laboratory offered on 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 is 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. (3) Three hours of lecture/laboratory offered on 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 is discussed on an ongoing basis. Each student is required to turn in at least five patient write-ups per term. (SP) Stevens, Swartzberg

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 share a keen interest in the medical and biological aspects of death. The topics covered will include various religious, cultural, and personal perspectives through the use of literature, in-class writing and discussion, and occasionally and in-class music. A 10-15 page paper will be required. (SP) Mico

261. Thesis Seminar. (1) Two hours of seminar per week every other week. Must be taken on a satisfactory/unsatisfactory basis. Prerequisites: Graduate standing in Health and Medical Sciences UCB-UCSF Joint Medical Program. Students acquire skills necessary to define a research question, find appropriate mentorship, and design a research project. Summer course introduces research design and statistical considerations for M.S. research in Health and Medical Sciences. Fall and spring semesters address topics in research, data collection, data analysis, reporting and radiographic 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 is discussed on an ongoing basis. Each student is required to turn in at least five patient write-ups per term. (SP) Mico

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. Designed to permit qualified graduate students to pursue special study under the direction of a faculty member. (F,SP) Staff

298. Directed Group Study. (1-5) Variable. Sections 1-8 to be graded on a satisfactory/unsatisfactory basis. 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. (1-12) Course may be repeated for credit. Independent study under the direction of a faculty member. One unit of credit represents 4 hours of student work per week in the regular semester. Prerequisites: Graduate standing in HMS Joint Medical Program. Students conduct independent study under the direction of a faculty member. Independent study, research, and writing in an area related to program of study, sponsored by an approved faculty member and approved by program advisor. (F,SP) Staff
Health Services and Policy Analysis  
(School of Public Health, Interdepartmental Graduate Groups)

Department Office: 411 Warren Hall, (510) 643-8571  
Chair: Ralph Catalano, Ph.D.

Professors  
Bob Anderson, Ph.D. (Economics)  
Eugene Bardach, Ph.D. (Public Policy)  
Joan Bloom, Ph.D. (Public Health)  
Yale Braunstein, Ph.D. (Information Management and Systems)  
Ralph Catalano (Chair) Ph.D. (Public Health)  
Kerrigan, Ph.D. (Law)  
Neil Fliepstein, Ph.D. (Sociology)  
Lee Friedman, Ph.D. (Sociology)  
Paul Gerster, Ph.D. (Public Health)  
Helen Ann Hafkin, Ph.D. (Public Health)  
Ten-Wei Hu, Ph.D. (Public Health)  
Theodore Keeler, Ph.D. (Economics)  
Evelyn LaPorte, Ph.D. (Public Science)  
Ron Lee, Ph.D. (Demography/Economics)  
David Leonard, Ph.D. (Political Science)  
Kristin Luker, Ph.D. (Sociology)  
James Robinson, Ph.D. (Public Health)  
Thomas Russell, Ph.D. (Public Health)  
Richard Schneller, Ph.D. (Public Health)  
Bob Anderson, Ph.D. (Public Health)  
Ralph Catalano, Ph.D. (Business)  
Lonne Snowden, Jr., Ph.D. (Social Welfare)

Associate Professors  
Wendy Block, Ph.D. (Public Health)  
Judith Gruber, Ph.D. (Political Science)  
Jon Levy, Ph.D. (Political Science)  
Jenifer Larrabee, Ph.D. (Public Health)  
Frances Van Loo, Ph.D. (Business)

Assistant Professors  
Ann Keller, Ph.D. (Public Health)  
Botond Kossen, Ph.D. (Economics)  
Edward Miguel, Ph.D. (Economics)

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 thorough 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. Dissertation research is empirically based and relevant to the provision, financing, and evaluation of health services. For further information go to http://hsph.berkeley.edu or e-mail hsph_phd@berkeley.edu.

History  
(College of Letters and Science)

Department Office: 3239 Dwaine Hall, (510) 642-1971  
Professors  
Ricard M. Abrams, Ph.D. Columbia University. Recent U.S., political, economic, business  
Allan Adolph, Ph.D. University of Leeds. Late modern Europe, international relations  
Margaret L. Anderson, Ph.D. Brown University. Late modern Europe, Germany  
Thomas G. Barnes, D.Phil. Oxford University. British since 1951, Tudor, Stuart, business  
Susanna K. Barns, Ph.D. Yale University. Modern East Asia, Japan, Taiwan, China  
Andrew E. Barsky, Ph.D. University of California, Berkeley. East Asia, modern Japan  
Robert M. Bennet, Ph.D. University of Minnesota. German history  
Me. Berry, Ph.D. Harvard University. Japan  
Thomas A. Brady, Ph.D. University of Chicago. Early modern Europe, Renaissance Germany  
Richard Candida Smith, Ph.D. University of California, Los Angeles. U.S. cultural, intellectual, oral history theory and literatures  
Diane S. Clemons, Ph.D. University of California at Santa Barbara. American history  
Jan de Vries, Ph.D. Yale University. European economics  
John Efron, Ph.D. Columbia University. Modern Jewish  

Professors  
David Frick, Ph.D. Yale University. Slavic languages and literatures  
David Lieberman, Ph.D. London University. (Law)  
Carolyn Merchant, Ph.D. University of Wisconsin, Madison. Environmental History (Conservation and Resource Studies)

*Professor of the Graduate School  
†Recipient of Distinguished Teaching Award  
R prefix=course satisfies R&C requirement  
C prefix=course satisfies R&C requirement  
AC prefix=course satisfies American cultures requirement

Department Overview  
The Department of History offers a program of instruction ranging widely over the historical record of human experience. The chronological, geographical, and topical range affords great flexibility to students working toward degrees in history and to those who wish to give a historical dimension to their studies in other disciplines. Lecture courses and seminars are available to students at introductory and advanced levels.

The Major  
The major in history consists of 12 courses (usually for a total of 49 units), at least 12 of which must be completed within the Department of History. Students may include one course from another department in constructing their fields of concentration (see below). Individual programs must satisfy both lower and upper division requirements. They must also include at least one course devoted entirely to premodern history (to be selected from courses focused on one or more of the following eras: antiquity, the classical period, and the medieval period; courses dealing solely with the early modern period do not satisfy this requirement).

Courses satisfying the premodern history requirement  

Students may declare the major after completing three courses in the Department of History, including at least two courses in the lower division.

Lower Division Requirements  
Four courses, including the following:  
• one survey course in the history of the United States;  
• one survey course in the history of Europe;  
• one survey course in the history of another world area;  
• one elective (of any additional offering, including History R1 and R3).

Students may substitute one upper division course for any of the first three requirements.

Upper Division Requirements  
Eight courses, to include the following: one proseminar (History 101); one research seminar (History 101). At least four upper division courses must constitute a field of concentration, which is defined by one of the following rubrics:  
• a period (such as the ancient world, the medieval world, the 20th century, or a similarly broad temporal span);  
• a geographical area (such as Eastern Europe, China, the Mediterranean, or a similarly broad spatial extent);  
• a thematic approach (such as science and medicine, law, popular culture, religion, or a similarly broad subject matter).

The four courses constituting the field of concentration must include History 101. The three additional courses in the field of concentration may include History 103. They may also include one appropriate upper division course (of at least 3 units) from another department. Students must select...
cour approval for their fields of concentration from the Committee on the History Undergraduate Major (CHUM) two semesters before graduation (thus, for example, during the spring of the junior year for majors expecting to graduate the following spring). While individual majors must define their own particular fields of concentration, CHUM offers the following stacks of possible fields to assist students in making their decisions:

Fields Defined by Period

- an era (for example, the ancient period, the medieval period, the early modern period);
- 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 revolution in Europe and North America, the age of nation-building in the Middle East).

Fields Defined by Geographical Area

- a national unit (for example, China, France, Kenya, Mexico);
- an empire (for example, the Roman Empire, the Byzantine Empire, the Ottoman Empire, the Spanish Empire, the British Empire, the Japanese Empire);
- a geopolitical region (for example, East Africa, Eastern Europe, Latin America, the Middle East, Southeast Asia);
- a geophysical region (for example, the Atlantic world, the Black Sea, the Indian Ocean, the Mediterranean, the Persian Gulf).

Fields 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 exhaustive or prescriptive. Students are free to combine 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.

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 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 non-majors as well as prospective majors, this course introduces students to the discipline of history as a humanistic inquiry into 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 classical historians from different cultural traditions, contemporary historical debates, and an exploration of original sources available at Berkeley. Satisfies half of the Reading and Composition requirement. (F,SP)

3. History of the Byzantine and Islamic Near East, 4th-15th Centuries. (4) Three hours of lecture and two hours of discussion per week. A general introduction to the study of the Middle East. 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 4th-15th 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 of pre-industrial societies, and the 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. Two hours of lecture and two hours of discussion per week. Introduc-

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tory 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)

4A. Ancient. (4)

4B. Medieval. (4, F,SP)

5. European Civilization from the Renaissance to the Present. (4) Two hours of lecture and two hours of discussion per week. A survey of Europe from the Re-

naissance to the present. (F,SP)

7. Introduction to the History of the United States. Two to three hours of lecture and two hours of dis-

6. European Civilization from the Renaissance to the Present. (4) Two hours of lecture and two hours of discussion per week. A survey of Europe from the Renaissance to the present. (F,SP)

3. History of the Byzantine and Islamic Near East, 4th-15th Centuries. (4) Three hours of lecture and two hours of discussion per week. A general introduction to the study of the Middle East. 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 4th-15th 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 of pre-industrial societies, and the 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. Two hours of lecture and two hours of discussion per week. Introduc-
tory 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)

4A. Ancient. (4)

4B. Medieval. (4, F,SP)

5. European Civilization from the Renaissance to the Present. (4) Two hours of lecture and two hours of discussion per week. A survey of Europe from the Re-
naissance to the present. (F,SP)

7. Introduction to the History of the United States. Two to three hours of lecture and two hours of dis-
cussion per week. (F,SP)

7A. From Colonial Settlement to the Civil War. (4) This course satisfies the American cultures requirement.

7B. From the Civil War to the Present. (4) This course satisfies the American cultures requirement. (F,SP)

8. Latin American History. Three hours of lecture and two hours of discussion per week. (F,SP)

8A. Latin America. (4) The colonial period.

8B. Latin America. (4) The national period. (F,SP)

9. Asian History. Three hours of lecture and two hours of discussion per week. An introductory survey of the history of Asia. (F,SP)

10. African History. (4) Two 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 9A. The history of China from its begin-
nings to the destruction of the Song Dynasty by the Mongols in the 13th century. Topics to be covered in-
clude the emergence of Chinese civilization, the Chi-
inese language, early rhetoric and philosophy, the cre-
aton 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 callig-
raphy. 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 9D. This is an introduction to Chi-
inese history from the 13th through the 20th cen-
turies—from the Mongols and Kubilai Khan’s con-
quest 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 Chi-
inese 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 course 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, cultural/intellectual history. Topics include the dialectic of national and local identities in shaping Japanese pol-
itics, Japan’s interaction with the Asian continent and Western world, and the relation of past to present in modern times. (F,SP)

16AC. The Forging of the U.S.: Expansion and Inte-
raction among American People. (4) Three hours of lecture and two hours of discussion per week. For-
merly 16. This course considers the culturally diverse Americans who reside within the geographical boundaries of to-
day’s U.S. The history, societies, cultures, perceptions, attitudes and laws of these peoples are the subject matter. Groups will be looked at chronologically in terms of the natural historical processes that brought them together during expansion westward and south-
ward by the Anglo-American governmental units. These groups are: European, Native, African, Chicano Americans and Pacific Rim peoples. This course satisfies the American cultures requirement.

R20. Introduction to the Practice and Theory of History. (5) Three hours of lecture and two hours of discussion per week. In this course we are going to ex-
plore the writing of history from modern intellectual roots in 19th century philosophy to recent experimental work with autobiography, film, and pop culture. Students will learn to evaluate historical arguments; ac-
quire familiarity with the use of primary sources and a di-
verse as published classics, landscapes, movies, and census data; and gain a working knowledge of the his-
tory of critical practice. Satisfies half of the Reading and Composition requirement. (F,SP) Klein

24. 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 the opportu-
ity to explore an intellectual topic with a faculty member in a small seminar setting. Freshman semi-
nars offered in all campus departments. Topics vary from department to department and semester to semester. Enrollment limited to fifteen freshmen.

30. Science and Society. Two 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.

30B. Science, Technology, and Society since Newton. (4) The development of science and its applications as a major force in modern society.

39. Freshman Sophomore Seminar. Course may be repeated for credit with different instructor. 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-group setting. These seminars are offered in all campus departments; topics vary from department to department and from semester to semester.

39W. Ethno-Racial Mixture and Identity in Modern America. (4) This course satisfies the American cultures requirement.

84. Sophomore Seminar. (1,2) Course may be repeated for credit as topic varies. Credits for 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 member and student in the crucial second year. The topics vary from department to department and semester to semester. Enrollment limited to 15 sophomores. (F,SP)

96. Directed Group Study for Lower Division Students. (2) Course may be repeated for credit. Three hours of credit per discussion/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.

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. Course 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 instructors to deal with a topic of interest rather than the usual course content, 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 done by the instructor. Conference meetings. (F,SP)

100AC. Special Topics. (4) Four hours of lecture/discussion per week. Designed primarily to permit the instructors to deal with a topic of interest rather than the usual course content, 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 done by the instructor. Conference meetings. (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; research on various historical topics 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 ten to twelve hours per week are required. (F,SP)

H102. Colloquium on Historical Thought. (4) Two hours of seminar per week. Prerequisites: Completion of 101; either junior honors standing or senior non-honors standing. Consideration of the nature and function of historical thought as manifested in major historical classics and selected historical problems. Required of honors program juniors; open, by permission of instructor, to non-honors program seniors upon completion of 101. (F,SP)

103. Proseminar: Problems in Interpretation in the Several Fields of History. Course may be repeated for credit with consent of instructor. Three hours of seminar/discussion per week. Prerequisites: Consent of instructor. Designed primarily to give majors in his-

103A. Ancient. (4) (F,SP)

103B. Europe. (4) (F,SP)

103C. England. (4) (F,SP)

103D. United States. (4) (F,SP)

103E. Latin America. (4) (F,SP)

103F. Asia. (4) (F,SP)

103H. Africa. (4) (F,SP)

103N. Canada. (4) (F,SP)

103R. This course will resemble the traditional His-
tory 103s but will emphasize training in research more than historical criticism. The goal is to prepare students for History 101, the thesis-writing seminar, while at the same time engaging with a topic of historical or his-
torical significance. Assignments and expectations will vary but should include a research paper relevant to is-
ues raised in the seminar, and will also include a brief thesis pre-prospectus for the students whose main field is the same as the field of the 103R. In the his-
tory major, 103R will replace the 103 requirement in the main field. (F,SP)

103S. History of Science. (4) (F,SP)

103U. Studies in Comparative History. (4) (F,SP)

105. Ancient Greece. Three hours of lecture and one hour of discussion per week. (F,SP)

105A. Bronze Age and Archaic. (4) Until ca. 500 B.C. The beginning of organized activity in Greek cities. (F,SP)

105B. Classical. (4) From ca. 500 until the time of Philip II of Macedon. More complex relations between Greek cities. (F,SP)

105C. Hellenistic Age. (4) From Alexander the Great to Cleopatra. The course explores the achievements of Alexander, the struggle for power among his suc-
cessors, the social, political and economic history of the new Hellenistic kingdoms, and the expansion of Greek culture into the Near East. (F,SP)

106. Ancient Rome. Three hours of lecture and one hour of discussion per week. (F,SP)

106A. The Roman Republic. (4) A history of Rome from the foundation of the city to the dictatorship of Caesar. The course examines the evolution of Re-
publican government, the growth of Roman imperialism, and the internal disruptions of the age of the Grac-
chi, Sulla, and Caesar. (F,SP)

106B. The Roman Empire. (4) A history of Rome from Augustus to Constantine. The course surveys the struggles between the Roman emperors and the sen-
atorial class, the relationship between civil and military government, the emergence of Christianity, and Ro-
man literature as a reflection of social and intellectual life. (F,SP)

107. Topics in Ancient History. Three hours of lec-
ture and one hour of discussion per week. (F,SP)

107D. Roman Law. (4) This course will pay attention to sources of law, forms, and procedure. It will con-
centrate on the state as an organization, especially the state's role in regulating the personal life, acquisition of particular things, inheritance, and con-
tacts. The development of the constitution and the criminal courts in the Late Republic will be noted. (F,SP)

108. Byzantium. (4) Three hours of lecture and one hour of discussion per week. The social, cultural, and religious history of the eastern Mediterranean region from late antiquity through the early middle ages. The survival of the Roman Empire in Byzantium, the Sassanian Empire in Iran, and the rise of Islam are the topics covered. (F,SP)

109A. The Rise of Islamic Civilization, 600-1200. (4) Three hours of lecture and one hour of discussion per week. A survey of Islamic civilization in the Middle East during the medieval period. Topics include the emer-
gen of Islam in Arabia and the role of the prophet Muham-
mad; the rapid rise of an Islamic empire and its effects on the societies it governed; the creation of an Islamic civilization and the religious, political, and int-
etional contact with the Byzantine, the Sassanian, and the Roman worlds. (F,SP)

109B. The Middle East, 1000-1750. (4) Three hours of lecture and one hour of discussion per week. The establishment of Turkish dominion in the Middle East: Seljuk, Mongols, Ottomans, and Safavids. (F,SP)

109C. The Middle East from the 18th Century to the Present. (4) Three hours of lecture and one hour of discussion per week. The breaking of pre-modern em-
pires and the formation of national states in the Arab world, Turkey, Iran, and Islam and nationalism. (F,SP)

111. Topics in the History of Southeast Asia. Three hours of lecture and one hour of voluntary discussion per week. (F,SP)

111A. Southeast Asia to the 18th Century. (4)  The rise of the region’s most important classical and early mod-
ern states; long-term economic, social, and religious trends. (F,SP)

111B. 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 Southeast Asian C141A. (F,SP) Staff

111C. Political and Cultural History of Vietnam. (4) This course provides an introduction to the main issues in Vietnamese history from the dynastic and archeo-
logical origins of the modern nation-state to the end of the Second Indochina War in 1975. Special emphasis will be placed on the “modern” developments from the late 18th century. In addition to history texts, readings will be taken from novels, short stories, poetry, and memoirs. (F,SP)

111D. 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 archeo-
logical origins of the modern nation-state to the end of the Second Indochina War in 1975. Special emphasis will be placed on the “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 Southeast Asian C141D. (F,SP) Staff

112. Africa. Three hours of lecture and one hour of discussion per week. (F,SP)

112B. Modern Africa. (4) (F,SP)

113A. Traditional Korean History. (4) Three hours of lecture and one hour of discussion per week. This course surveys major issues in Korean history from the origins of the Korean people to the 19th century. (F,SP)

113B. Modern Korean History. (4) Three hours of lecture and one hour of discussion per week. This course will survey major social, economic, and polit-
ical developments on the Korean peninsula from the middle of the 19th century.
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.

116A. Early China. (4)

116B. The Middle Period. (4)

116C. Modern China. (4)

116D. Twentieth-Century China. (4). Chinese history from the fall 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. (3) Three hours of lecture and one hour of discussion per week. 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, shrines, and domestic rituals; 2) the written word and literatures of local cultures; 3) opera, storytelling, and other forms of village 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. (3) Three hours of lecture and one hour of discussion per week. 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 does not determine for a particular temporal and geographical setting what’s ordinary or conventional and what’s not; also to rethink the metaphors that currently dominate thinking about history in China. No prior acquaintance with Chinese history is required for the course. (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 period, 17-19th century Japan. (F)

118B. 1800-1900. (4) Emphasis on the social and intellectual history of Japan’s pre-war reconstruction. (F)

118C. Late 19th Century to the Present. (4) Japan’s experience of the twentieth century, beginning with the development of capitalism and the acquisition of an empire; tracing the achievements and tragedy that came with Japan’s emergence as a world power. Emphasis on social and intellectual history, and on how Japan has understood itself and the world in this century. (F,SP)

C120. American Environmental and Cultural History. (4) Three hours of lecture and one hour of discussion per week. This course explores how 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 European and African Americans. Natural resources development includes gathering-hunting-fishing; farming, mining, 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 Environ Sci, Policy, and Management 160AC. This course satisfies the American cultures requirement. (F,SP)

120AC. American Environmental and Cultural History. (4) Three hours of lecture and one hour of discussion per week. Formerly C120. 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 European and African Americans. Natural resources development includes gathering-hunting-fishing; farming, mining, 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 Environ Sci, Policy, and Management 160AC. This course satisfies the American cultures requirement. (F,SP)

121A. American History, the Colonial Period: The People and Cultures of Early America. (4) America has always been a multicultural society and perhaps at no time was this more true than in the 17th and 18th centuries. In this course, we analyze the experiences of Native, African-, and European-Americans from about the 16th century through 1763 within the framework of early modern colonization, focusing upon their conflicting and changing gender, religious, social, cultural, economic, and political systems. This course satisfies the American cultures requirement. (F,SP)

121B. The American Revolution. (4)

122AC. Antebellum America: The Advent of Mass Society. (4) Three hours of lecture and one hour of discussion per week. This course traces the development of a mass society and mass culture from the Revolutionary War to the Civil War, using a wide range of sources and perspectives. (F)

122B. The Age of the City: The 20th Century to the Present. (4) Three hours of lecture and one hour of discussion per week. (F,SP)

123. Civil War and Reconstruction. (3) 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 communication media. This class 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 politics persisted in many areas. Among the topics addressed: population movements and efforts to control immigration; the growth of corporate and trade unions; the campaign for women’s suffrage; Prohibition; an end to child labor; the institution of the Jim Crow system; and the reshaping of higher education. This course satisfies the American cultures requirement. (F,SP)

124B. 1941-1980. (4) American culture and political economy amidst affluence and turmoil in war and cold war. (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 Afro-Americans: the growth and influence of African America; the expansion of slavery and society, and social and cultural experience since emancipation. The course will consider race relations, particularly between blacks and whites in America. (F,SP)

125A. 1500-1865. (4) (F,SP)

125B. 1865 to the Present. (4) (F,SP)

126B. The West in United States History. (3) Three hours of lecture and one hour of discussion per week. This course follows American women through a century of extraordinary change, using autobiographical writings as our guide. Lectures will describe a fundamental transformation in the structures of gender, in-
1821? Reckoning with this question in regional and historical context, function, and meaning of these social and political movements, functioning, and eventual disintegration of the American population from about 20,000 BC with the migration. The course covers the evolution of the American cultures requirement.

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 role of science in society, and the intersection of science and political economy. Three hours of lecture and one hour of discussion per week. This course satisfies the American cultures requirement.

139A. American History. (4) This course explores the history of labor and working people in the United States from the 1830s to the 1880s, examining workers' experiences and expectations within the context of the economic, social, and political developments during the period. Three hours of lecture and one hour of discussion per week. This course satisfies the American cultures requirement. (F, SP)

139B. The American Immigrant Experience. (4) Three hours of lecture, one hour of self-paced laboratory work, and one hour of optional discussion section 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 migration of Amerindians, Africans, and Europeans. The course examines the culture of these dynamic urban societies, emphasizing the rich visual and material culture, as well as the particular relationship between religion and society in Italy before the Renaissance. Three hours of lecture and one hour of discussion per week. (F, SP)

149. Medieval Italy. Three hours of lecture and one hour of discussion per week. Emphasis on interpretation of primary sources. 149A. The Anglo-Saxon Period. (4) From the Romans through the Norman conquest to the Domesday Book and Eadmer. 150B. From the Conquest to 1290. (4) Government, observation of government, community, religion, and social change. 150C. Later Medieval England. Fourteenth and Fifteenth Centuries. (4) Emphasis upon social history.

151. Britain, 1848-1997. Three hours of lecture and one hour of discussion per week. This course will explore the history of the Caribbean region from the arrival of the first Europeans through the end of colonialism, a period of nearly 500 years. Focusing on the years that took place in the Middle Ages (ca. 1000-1350). It traces the emergence, flowering, and decline of the "commune," the independent city republics that made Italian political life distinctive during the Middle Ages. The course explores the culture of these dynamic urban communities, emphasizing the rich visual and material culture, as well as the particular relationship between religion and society in Italy before the Renaissance. (F, SP)

153. British Empire and Commonwealth. (4) This course explores the history of Britain as the paradigmatic venue of industrialization, class conflict or its absence, consumer culture, parliaments and democracy, national expansion, and modernity generally. It begins with the aftermath of Europe's first revolution and ends with the first world's fair, 1851's Great Exhibition. Three hours of lecture and one hour of discussion per week. This course satisfies the American cultures requirement.

152. Topics in the History of the British Isles. Three hours of lecture and one hour of discussion per week. This course analyzes the expansion, consolidation, functioning, and eventual disintegration of the modern British Empire. (F, SP)

153. British Empire and Commonwealth. (4) Three hours of lecture and one hour of discussion per week. This course examines the history and demography of the British Empire, including migration and the nature of empire, and its impact on the development of empire. Three hours of lecture and one hour of discussion per week. This course satisfies the American cultures requirement. (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. Three hours of lecture and one hour of discussion per week. This course satisfies the American cultures requirement. (F, SP)

155. Medieval Europe. Three hours of lecture and one hour of discussion per week. 155A. From the Late Empire to the Investiture Conflict. (4) Formula of a West European civilization; stress on tribal settlements, the Carolingian Empire, and Christian foundations. (F, SP)

156. Topics in Medieval History. Course may be repeated once for credit with consent of instructor. 156A. History of Christian Thought, 200-600 A.D. (4) Three hours of lecture and one hour of discussion per week. Emphasis on the "symbolist" (rather than the "sequential") mentality which pervaded the patrician and early medieval periods. Focus on the entire period with the period of the Church Fathers from Tertullian and Origen to Gregory the Great; particular stress on the thought of St. Augustine.

157. The Renaissance and the Reformation. (4) Three hours of lecture and one hour of discussion per week. Formerly 157. European history from the fourteenth to the middle of the twentieth century. Political, social, and economic developments during this period are analyzed. Three hours of lecture and one hour of discussion per week.
throughout the period, the Mediterranean was non-toman and Spanish Empires. A frequent battleground the Mediterranean world in the centuries when it was the art of war, as Machiavelli called it, took center stage as the peninsula became one of the major theaters of war between the great powers of the age, France and Spain. The course will combine a study of the artistic, intellectual, religious, and political history of Italy in this period both as it developed internally and as it was related to the rest of Europe and the Mediterranean world. 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 uses the devices of historical and literary interpretation to examine some of the lines of political and cultural development that have led to the Poland we now know. Beginning with the awakening of modern Polish nationalism, it traces the emergence of this Polish nationalism through the rise of the modern nation-state. This course will also consider the role of the Jews in Poland and the history of Jewish culture in the region. The course will make extensive use of secondary literature in the treatment of non-Jewish sources. Also listed as Undergraduate Interdisciplinary Studies C154 and Religious Studies C134. Staff.

171. Russia. Three hours of lecture and one hour of discussion per week. (F,SP)

171A. Russia to 1700. (4) (F,SP)

171B. Russia 1700-1917. (4) (F,SP)

171C. The Soviet Union, 1917 to the Present. (4) (F,SP)

172. Topics in Russian History, (4) Three hours of lecture and one hour of discussion per week. A. Russian Intellectual History to the Present. B. Russian Cultural History. (F,SP)

173. History of Eastern Europe. Three hours of lecture and one hour of discussion per week. (F,SP)

173B. From 1500 to 1900. (4) (F,SP)

173C. History of Eastern Europe: From 1900 to the Present. (4) (F,SP)

173D. Eastern Europe after 1989. (4) (F,SP)

174B. Jewish History. (4) Three hours of lecture and one hour of discussion per week. Jewish history from earliest times to the present. (F,SP)

175. Topics in the History of Eastern Europe. Three hours of lecture and one hour of voluntary discussion per week. (F,SP)

175A. A History of Poland-Lithuania. (4) The course will focus on the development of identities within the constantly shifting borders of Polish-Lithuanian and Polish-Ruthenian states. Among the topics: competing definitions—ethnic, confessional, linguistic, political—of Polishness; continuities and discontinuities in Polish history and historiography; Poland between East and West; the development of Polish self-perceptions; Jewish, Lithuanian, and Ukrainian identities in the Polish context; the Polish chapter in the events leading to the end of Communist hegemony in Eastern Europe. (F,SP)

C175A. 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 kabbalah, medieval poetry, halakhic, ethical literature, Jewish philosophy, and the Italian Jewish renaissance. Also listed as Undergraduate Interdisciplinary Studies C154 and Religious Studies C134. Staff.

C175B. 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 assimilation, modernity, anti-Semitism, colonialism, Zionism, and contemporary Jewish life 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 Undergraduate Interdisciplinary Studies C155 and Religious Studies C135. Staff.

C176. 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 consider the effects of massive migration flows—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 traditional concepts of nationhood and citizenship, and (2) a study of the Europeanization of culture. Also listed as Geography C152, Interdisciplinary Studies C145, and International and Area Studies C145. (F,SP)

C177. Armenia. Three hours of lecture and one hour of discussion per week. (F,SP)

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 framework of Armenian political history and institutions, but also emphasizes economic development, social change, and cultural transformations. (F,SP)

177B. From Pre-modern Empires to the Present. (4) This survey course will cover the period from the in-
School of Social Sciences

corporation 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 surrounding 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) a 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. (161B. 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 political force in world history and as a religion intended to cultural, social, and political change. (F,SP)

185A. Beginnings to ca. 1250. (4) (F,SP)

185B. 1250 to the Present. (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 may 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 difficulties 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 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 Health and Medical Sciences C133. (SP) Laqueur, Micco

H195. Senior Honors. (4) Independent. Prerequisites: Senior standing and limited to seniors honors candidates. Directed study centering upon the preparation of an honors thesis. Supervisors will be assigned to each student after consultation with the honors committee.

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. Prerequisites: Consent of instructor. Formerly C196W. Students to 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 or more different American cultures. Technology and the global village. Sponsoring departments: Engineering Interdisciplinary Studies C131, and Health and Medical Sciences C133. (SP) Kacoo, Laqueur, Micco

199. Supervised Independent Study and Research. (1-4) Course may be repeated for credit. Independent. Must be taken on a passed/not passed basis. Prerequisites: Enrollment is restricted by regulations. (F,SP)

Graduate Courses

200X. Special Topics: Short Course. (2) Course may be repeated for credit. Four hours of lecture/clinic per week. A four-week long course permitting the instructor to cover in-depth a topic of particular interest. Topics and instructors vary; consult department catalog for details.

275. Core Courses in the Literature of the Several Fields of History. Course may be repeated for credit. Three hours of seminar per week. To provide a broad survey of the literature and historiographical problems of the different fields in history.

275A. Ancient. (4)

275B. Europe. (4)

275C. England. (4)

275D. United States. (4)

275E. Latin America. (4)

275F. Asia. (4)

275G. History of Science. (4)

280. Advanced Studies: Sources/Generic Literature of the Several Fields. Course may be repeated for credit. Three hours of seminar per week. A four-week long course permitting the instructor to cover in-depth a topic of particular interest. Topics and instructors vary; consult department catalog for details.

280A. Ancient. (4)

280B. Europe. (4)

280C. England. (4)

280D. United States. (4)

280E. Latin America. (4)

280F. Asia (For M.A. Candidates). (4)

280G. Asia (For Ph.D. Candidates). (4)

280H. Africa. (4)

280N. Canada. (4)

280S. History of Science. (4)

280U. Studies in Comparative History. (4)

281. Paleography and Other Auxiliary Sciences. (4) Course may be repeated for credit with different instructor. Three hours of seminar per week. Introduction to the scholarly handling of texts, whether ancient or modern, inscriptions or manuscripts, and instruction in the methods, tools, and the editing and use of texts relevant to a particular field of history; instruction in any auxiliary science requisite for historical research.

283. Historical Method and Theory. (4) Three hours of seminar per week. Designed especially for candidates for higher degrees in History. Stress is laid on practical exercises. For precise schedule of offerings see department catalog during pre-enrollment week each semester.

285. Research Seminars. Three hours of seminar per week. For precise schedule of offerings see department catalog during pre-enrollment week each semester.

285A. Ancient. (4)

285B. Europe. (4)

285C. England. (4)

285D. United States. (4)

285E. Latin America. (4)

285F. Asia. (4)

285H. Africa. (4)

285L. Legal History. (4)

285S. History of Science. (4)

285U. Studies in Comparative History. (4)

290. Historical Colloquium. (1) Course may be repeated for credit. Two hours of lecture per week. Must be taken on a satisfactory/unsatisfactory basis. Colloquium on topics of current research. For precise schedule of offerings, see department catalog during pre-enrollment week each semester. (F,SP)

295. Supervised Research Colloquium, (2-5) Course may be repeated for credit. Two hours of lecture per week. Prerequisites: Consent of instructor. Preparation, presentation and criticism of research papers.

296. Directed Dissertation Research. (3-12) Course may be repeated for credit. Independent. Must be taken on a satisfactory/unsatisfactory basis. Prerequisites: Open to qualified students directly engaged upon the doctoral dissertation. (F,SP)

298. Independent Study for Graduate Students in History. (2-12) Course may be repeated for credit. Independent. Must be taken on a satisfactory/unsatisfactory basis. Prerequisites: Consent of instructor.

299. Directed Reading, (2-12) Course may be repeated for credit. Independent. Prerequisites: Consent of instructor. Individual conferences to be arranged. Intended to provide directed reading in subject matter not covered in scheduled seminar offerings. (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. Independent. Must be taken on a satisfactory/unsatisfactory basis. Prerequisites: For candidates for master’s degree. Individual study, in consultation with the graduate adviser, to prepare for student’s language examinations and the master’s examination.

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. Must be taken on a satisfactory/unsatisfactory basis. Prerequisites: For candidates for doctoral degree. Individual study, in consultation with the graduate adviser, to prepare 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 main parts: (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 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 the 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 republican and pastoral ideals. The relationship of slavery and technology. The industrial and agricultural revolutions: winners and losers. Immigration and technological progress in America. The 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
(College of Engineering)

Department Office: 4141 Etcheverry Hall #1777, (510) 642-5848
http://www.ieor.berkeley.edu/
Chair: Lee W. Schruben, Ph.D.

Professors
Ilan Adler, Ph.D. Stanford University. Mathematical programming
Kenneth Y. Goldberg, Ph.D. Carnegie-Mellon University. Robotics and automation
Dont S. Hochbaum, Ph.D. University of Pennsylvania. Combinatorial optimization, management information systems
Robert C. Leachman, Ph.D. University of California, Berkeley. Management information systems
Shmuel S. Uren, Ph.D. Stanford University. Economics systems theory and modeling
Christos H. Papadimitriou (C. Lester Hogan Professor in Electrical Engineering and Computer Sciences), Ph.D. Princeton University. Theory of computation
Rhonda L. Righter, Ph.D. University of California, Berkeley. Network optimization
Lee S. Shoemaker (Chair), Ph.D. University of California, Berkeley. Computer simulation
J. George Shanthikumar, Ph.D. University of Toronto. Performance and modeling
Ilan Adler, Ph.D. Stanford University. Mathematical optimization
Chair: Lee W. Schruben, Ph.D.

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, or public 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 thesis or by comprehensive examination. Doctoral degrees are granted on a pass/fail by petition basis. Students must successfully pass two minor fields following by submission of a thesis 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 graduate 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, 4141 Etcheverry Hall, Berkeley, CA 94720-1777, and in 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 and Systems Engineering 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. Section 1 to be graded on a letter-grade basis. Section 2 to be graded on a pass/unkind pass/fail 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) 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 pass/not 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 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. (SP) Ross

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 interaction with intellectual colleagues for faculty members and students in the crucial second year. The topics vary from department to department and semester to semester. Enroll limit to 15 sophomores. (F,SP)
Upper Division Courses

115. Industrial and Commercial Data Systems. (3) Three hours of lecture and two hours of laboratory per project per week. Prerequisites: Engineering 77 and upper division standing. Design and implementation of databases, with an emphasis on industrial and computer applications. Introduction to relational database normalization. Students work in teams with local companies on a database design project. WWW design and queries. (F) Goldberg

120. Methods of Manufacturing Improvement. (3) Three hours of lecture per week. Prerequisites: Mathematics 53 and 54 may be taken concurrently. Analytical techniques for the improvement of manufacturing performance along the dimensions of productivity, quality, customer service, and throughput. Topics include analysis, process control, inspection, sampling, efficiency analysis, cycle time reduction, and on-time delivery improvement. Applications on semiconductor manufacturing or other industrial settings. (SP) Leachman

131. Discrete Event Simulation. (3) Two hours of lecture and one hour of discussion per week. Prerequisites: 161, 165; Statistics 134. Introductory course on design, programming, and statistical analysis of a simulation. Design and programming of the types of problems that can be solved by such methods. Programming material includes the theory behind random variable generation for a variety of common variables. Techniques to reproduce the resulting event tables and statistical analysis are considered. Final project required. (FSP) Schruben

140. Introduction to Mobile Industrial Robots. (4) Two hours of lecture, two hours of laboratory, and two hours of workshop per week. Prerequisites: Engineering 77 and upper division standing. Introduction to the hardware and software design of autonomous vehicles. Basic concepts of sensors, actuators, navigation, exploration, feedback control, and object recognition. Object detection principles. Programming for real-time control using Java. Laboratory project teams will design, build, program, and test small prototype vehicles for material handling systems and other applications. (FSP) Glasure, Goldberg

150. Production Systems Analysis. (3) Three hours of lecture per week. Prerequisites: 160, 161, 162, 165, and Engineering 120, or senior standing in manufacturing engineering. Quantitative models for operational and tactical decision making in production systems, including production planning, inventory control, forecasting, and scheduling. (F) Yano

151. Service Operations Design and Analysis. (3) Three hours of lecture per week. Prerequisites: 161, 162, 165, and Statistics 134. Course is concerned with improving processes and designing facilities for service businesses such as banks, health care organizations, telephone call centers, restaurants, and transportation providers. Major topics in the course include design of service processes, layout and location of service facilities, demand forecasting, demand management, employee scheduling, service quality management, and capacity planning. (SP, Staff)

153. Logistics Network Design and Supply Chain Management. (3) Three hours of lecture per week. Prerequisites: 160, 162 or senior standing. We will focus primarily on both quantitative and qualitative issues within the domain of logistics design and management of the entire logistics network. Models and solution techniques for facility location and logistics network design will be considered. In addition, qualitative issues in distribution network structuring, centralized versus decentralized network control, variability in the supply chain, strategic partnerships, and product design for logistics will be considered through discussions and cases. (F) Kaminsky


162. Linear Programming. (3) Two hours of lecture and one hour of discussion per week. Prerequisites: Mathematics 53 and 54. Formulation to linear programs. Optimal allocation and control problems in industry and environmental studies. Convex sets; properties of optimal solutions. The simplex method; theory of duality and sensitivity analysis. Problems of post-optimization. Special structures; network problems. Digital computation. (F-SP)

165. Engineering Statistics, Quality Control, and Forecasting. (3) Three hours of lecture per week. Prerequisites: Statistics 134 or an equivalent course in probability theory. This course will introduce students to basic statistical techniques such as parameter estimation, hypothesis testing, regression analysis, analysis of variance, design of experiments, and non-parametric statistics. The statistical techniques to data analysis problems in engineering and manufacturing systems will be the main foci of this course. Specific applications in forecasting and quality control will be considered. Forecasts will be based on moving average, exponential smoothing, and regression analysis will be studied. Quality and process control using x-bar, moving average, cumulative sum, and range charts will be discussed. (SP) Shanbhag

166. Decision Analysis. (3) Three hours of lecture per week. Prerequisites: Statistics 134. Introductory course on the theory and applications of decision analysis. Elective course that provides a systematic evaluation of decision-making problems under uncertainty. Emphasis on this class will be on the theory of decision-making techniques in engineering, operations research and systems analysis. Includes formulation of risk problems and probabilistic risk assessments. Graphical methods and computer software using event trees, decision trees, and influence diagrams that focus on model design. (SP) Oren

170. Industrial Design and Human Factors. (3) Three hours of lecture per week. Prerequisites: Upper division standing. This course surveys topics related to the design of physical spaces ranging from alarm clocks, cell phones, and dashboards to logos, presentations, and web sites. Design of such systems requires familiarity with human factors and ergonomics, including the physics and perception of color, sound, and touch, as well as empirical data and behavioral models. (FSP) Staff

171. Introduction to Design of Human Work Systems. (3) Three hours of lecture and 2 hours of laboratory per week. Prerequisites: 160, 162 or senior standing. Students cannot receive credit for both 171 and Business Administration 150. Three hours of lecture per week. Prerequisites: Upper division standing. Qualitative management principles and techniques used to maximize labor productivity, employee satisfaction, and organizational performance in working settings. Topics covered include job attitudes, person-job fit, worker motivation, leadership, organizational culture, technology and innovation management, communication, group dynamics, decision making, and power and influence. (F) Staff

172. Probability and Risk Analysis for Engineers. (3) Two hours of lecture and one hour of discussion per week. Prerequisites: Mathematics 1A and 1B or 16A and 16B. This is an introductory probability course for students majoring in engineering. Topics will include random variables and their applications. Applications will be given in such areas as reliability theory, risk theory, inventory theory, failure models, stress models, computer science, and others. (FSP) Ross

180. Senior Project. (4) One hour of lecture, one hour of consultation with faculty advisor, and six hours of company visits per week. Prerequisites: 131, 160, 161, 162, 165, Engineering 120, 190, and three other Industrial Engineering and Operations Research electives. Application of systems analysis and industrial engineering to the analysis, planning, and/or design of industrial, service, and government systems. Analysis of technology and equipment aspects of the design 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. One or two hours of seminar per week. Prerequisites: Consent of instructor. The 190 series covers current topics of research interest in industrial engineering and operations research. The course content will vary each semester to provide students with the department for current term topics. (F,SP) Staff

H196A-H196B. Operations Research and Management Science Honors Thesis. (3-3) Course may be repeated for credit. Forty-five hours of academic work per unit per term. Must be taken on a passed/not passed basis. Prerequisites: Completion of two semesters of course work and project work on a field project under the supervision of a faculty member. Course does not satisfy unit or residency requirements for bachelor’s degree. (F,SP) Staff

197. Undergraduate Field Research in Industrial Engineering. (1-12) Course may be repeated for credit. Forty-five hours of academic work per unit per term. Must be taken on a passed/not passed basis. Prerequisites: Consent of instructor. The 197 series consists of one or two courses for students in the honors program. The course content will vary each semester to provide students with the department for current term topics. (F,SP) Staff

199. Supervised Independent Study. (1-4) Course may be repeated for credit. Forty-five hours of academic work per unit per term. Must be taken on a passed/not passed basis. Prerequisites: Consent of instructor. This course is for students who have completed a minimum of four units per semester. Individual courses. Must be taken on a passed/not passed basis. Prerequisites: Consent of instructor. Group studies of selected topics. Semester course unit value and contact hours will have a one-to-one ratio. (F,SP) Staff

Graduate Courses

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 of relational databases, querying, and normalization. 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 upper division standing in probability or stochastic processes. A course on financial concepts useful for engineers that will cover, among other topics, those of interest rates, present values, arbitrage, geometric Brownian motion, perfect delta hedging, 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 evaluating real options will be presented. The use of mathematical optimization models as a framework for analyzing financial engineering problems will be shown. (F) Alder, Oren, Ross

250. Introduction to Production Planning and Logistics Models. (3) Three hours of lecture per week. Prerequisites: C12 and 123A taken concurrently. This
will be an introductory first-year graduate course covering fundamental models in production planning and logistics. Models, algorithms, and analytical techniques 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: 262A and Statistics 134. 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 computers and the 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 263B. Mathematical and computer methods for design, planning, scheduling, and control in manufacturing and distribution systems. (SP) Staff

261. Experimenting 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 modeling and evaluating 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, Shanthikumar

262A. Mathematical Programming I. (4) Three hours of lecture and discussion per week. Prerequisites: Mathematics 110 or equivalent. Basic first year graduate course in linear programming and introduction to network flows and non-linear programming. 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

262B. Mathematical Programming II. (3) Three hours of lecture per week. Prerequisites: 262A. Advanced course in linear programming and introduction to network flows and non-linear programming. 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


263B. Applied Stochastic Process II. (3) Three hours of lecture per week. Prerequisites: 263A. Continuous time Markov chains. The reversed chain concept in continuous time Markov chains with application to inventory, congestion and queueing models. Discrete time Markov chains and their applications to stationary and non-stationary stochastic processes. (SP) Ross, Shanthikumar

256. Network Flows and Graphs. (3) Three hours of lecture per week. Prerequisites: 262A (may be taken concurrently). Survey of solution techniques and problems that have formulations in terms of flows in networks. Max-flow min-cut theorem. Minimum cost flows. Multiterminal and multicommodity flows. Relationship between 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 110 or equivalent. Deterministic decision process problems, analytical and computational methods of solution, application to problems of equipment replacement, resource allocation, scheduling and search. Deterministic 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. 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 polyhedral optimization; branch and bound and Lagrangean relaxation. Hochbaum

280. Systems Analysis and Design Project. (3) Three hours of lecture per week. Prerequisites: 262A, 263A. A project course for students interested in applying optimization and operations research and engineering methods. One or more systems, which may be public or in the private sector, will be selected for detailed analysis and re-designed by student groups. (F-SP) Staff

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 robotic manipulation. Such algorithms accept as input a CAD model of the environment and return as output a set of solutions such as a robot motion plan. Topics vary from semester to semester. Goldberg

290L. Logistics Modeling. (3) Three hours of lecture per week. Prerequisites: 262A, 263A. Advanced course focusing on research in the area of modeling and analysis of logistics systems. Initial topics include analytical techniques such as worst-case and average-case analysis. Later topics include the application of these techniques to routing, inventory, and integrated distribution models and algorithms. Kaminsky

297. Graduate Field Research in Industrial Engineering. (F,SP) Staff

300. Teaching Industrial Engineering and Operations Research. (1) One to two hours of seminar per week. Must be taken on a satisfactory/unsatisfactory basis. Prerequisites: Graduate standing. For current and future GSIs. Students learn about teaching through practice, research, discussion, etc. Each student leads one class, introducing the topic based on their research, and leading discussion; the student provides reading materials for that class. Industrial Engineering and Operations Research faculty are invited to attend and participate. Students are videotaped giving a lecture and evaluate the tape with another student. Students observe a student or professor giving a lecture or leading discussion, and write a critique. (F) Righter

Infectious Diseases and Immunity

(School of Public Health, Interdepartmental Graduate Groups)

Office: 233 Warren Hall, (510) 642-2613
Chair: Richard Stephens, Ph.D.

Professors
Carolyn Bertozzi (Ph.D.) Chemistry
Robert S. Lane, Ph.D. (Environmental Science, Policy, and Management)
Terry Mächen, Ph.D. (Molecular and Cell Biology)
Daniel Portnoy, Ph.D. (Public Health/Molecular and Cell Biology)
Arthur Reingold, M.D. (Public Health)
Leil F. Riley, M.D. (Public Health)
George Sensabaugh, D.Cr. (Public Health)
Nathalie Shastri, Ph.D. (Molecular and Cell Biology)
Richard Stephens, Ph.D. (Public Health)
John Taylor, Ph.D. (Plant and Microbial Biology)

Associate Professors
Gertrude Bluethrud, Ph.D. (Public Health)
Suzanne Fleisszig, O.D., Ph.D. (Optometry)
Fenyong Liu, Ph.D. (Public Health)
Ellen Robey, Ph.D. (Molecular and Cell Biology)
Matthew Wein, Ph.D. (Molecular and Cell Biology)
Qiang Zhou, Ph.D. (Molecular and Cell Biology)

Assistant Professors
Laurent Coscor (Ph.D.) (Molecular and Cell Biology)
Eva Harris, Ph.D. (Public Health)

Graduate Adviser: Mr. Stephens.

Program Overview

The Graduate Group in Infectious Diseases and Immunity provides opportunity for study of the biology 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, epidemiology, and future GSIs. Students learn about teaching through practice, research, discussion, etc. Each student leads one class, introducing the topic based on their research, and leading discussion; the student provides reading materials for that class. Industrial Engineering and Operations Research faculty are invited to attend and participate. Students are videotaped giving a lecture and evaluate the tape with another student. Students observe a student or professor giving a lecture or leading discussion, and write a critique. (F) Righter

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Graduate Adviser: Mr. Stephens.
Information Management and Systems
(School of Information Management and Systems)

Office: 102 South Hall, (510) 642-1446
http://www.sims.berkeley.edu
Dean: Ann Lee Saxenian, Ph.D.

Professors
Robert Berring (Law Librarian), J.D. Legal information
Yale M. Braunstein, Ph.D. Economics of information and communication
Ray R. Larson, Ph.D. Information retrieval system design and evaluation
Peter Lyman, Ph.D. Ethnographic study of communication and social formation in digital and networked technologies
Pamela Samuelson, J.D. Intellectual property law
Arnoella Saxenian (Dean) Ph.D. Information technology and economic development
J. Douglas Tygar, Ph.D. Electronic commerce, cryptography, security, and privacy
AnnaLee Saxenian

Ray R. Larson, Ph.D Information retrieval system design and management. Graduates of SIMS find employment in institutions—anywhere information is created and managed.

The Master’s Degree in Information Management and Systems

The Master of Information Management and Systems program is a 42-unit, two-year program designed to train students in the skills needed to succeed as information professionals.

The first year of the program consists of a core curriculum with course work in information organization and retrieval, distributed computing, user interfaces and information design, and management of information systems. The second year involves additional electives, with the expectation that the student will specialize in particular aspects of information management and systems. During the summer between the two years, students are encouraged to work as interns in order to use their newly acquired skills in real-world settings. Internships can be in corporate, government, and nonprofit institutions.

The 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 research of those fields to pass written and oral examinations, 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 distinguishing accomplishment in that field through the contribution of an original piece of research revealing high critical ability and powers of imagination and synthesis.

Fields of Study. The following are the fields for the Ph.D. qualifying examination. Periodic changes to the list of fields and revisions to the degree requirements can be expected and will be announced to all students.

• Information users and society
• Organization and representation of information
• Information retrieval
• Management of information organizations and services
• Economics of information

Fields of Study

Lower Division Courses

C106. Introduction to Networked Applications and Computing. (3) Three hours of lecture per week. Prerequisites: 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 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 these networked applications, with 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. Also listed as Engineering C111. (SP) Messerschmitt

142AC. Access to American Cultural Heritage. (3) Three hours of lecture per week. Formerly 142. An introduction to issues in the preservation, description, and use of tangible forms of cultural heritage. Documentation of ownership, and control of access to cultural heritage resources in the U.S.A. Cultural groups, cultural identity, cultural policies, and cultural institutions (libraries, museums, schools, historic sites, etc.). This course satisfies the American cultures requirement. (F) Staff

146. Foundations of New Media. (4) Three hours of lecture and one hour of laboratory per week. 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. Instruction combines lectures and project-based learning using case studies from everyday technology (e.g., telephone, camera, web). (SP) Davis, Lyman

182AC. Print, Literacy, and Power in America to 1900. (3) Three hours of lecture per week. Formerly 182. Focus on European Americans, Native Americans, and African Americans in the 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 thesis, 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 educational 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) Duggan

190. Special Topics in Information Management and Systems. (3) Course may be repeated for credit. Three hours of seminar per week. Prerequisites: Consent of instructor. 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

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
202. Information Organization and Retrieval. (4) Three hours of lecture per week. Organization, representation, and manipulation of information. Concepts and methods of needs and usability assessment. Understanding users and tasks, and translating them into design decisions. Topics include methods of identifying and describing user needs and requirements; user-centered design; user and task analysis; contextual design; heuristic evaluation; surveys, interviews, and focus groups; usability testing; naturalistic/ethnographic methods; managing usability in organizations, and universal usability. (SP) Van House

219. Privacy, Security, and Cryptography. (3) Three hours of lecture per week. Prerequisites: 206 or consent of instructor. Policy and technical issues related to securing the accuracy and privacy of information. Encoding and decoding techniques including public and private key encryption. Survey of security problems in networked information systems, such as viruses, worms, trojan horses, Internet address spoofing. (SP) Tygar

220. Management of Information Systems and Services. (3) Three hours of lecture per week. Introduction to internal and external management issues for information organizations. Internal issues: organizational behavior, organizational theory, personnel, budgeting, planning. External issues: organizational environments, politics, marketing, strategic planning, funding sources. (SP) Staff

221. Information Policy. (3) Three hours of lecture per week. An examination of the nature of corporate, nonprofit, and governmental information policy. The appropriate role of the government in production 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) Braunstein

C224. Strategic Computing and Communications Technology. (3) Three hours of lecture per week. Prerequisites: Graduate standing in engineering, business administration, educational administration, or consent of instructor. Factors strongly impacting the success of new computing and communications products and services (based on underlying technologies such as microprocessors, networks, and commercial applications). Technology trends and limits, economics, standardization, intellectual 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) Messerschmidt, Varian

C227. Studies in Regional Growth and Development. (3) Three hours of seminar per week. Prerequisites: City and Regional Planning 220 or consent of instructor. Intermediate to advanced course focusing on theory and empirical evidence for regional growth and development, using reading and discussion. Also listed as City and Regional Planning 2227. (SP) Staff


231. Economics of Information. (3) Three hours of lecture per week. The measurement and analysis of the role information plays in the economy and the way that resources devoted to production, distribution, and consumption of information. Economic analysis of the information industry. Macroeconomics of information. (SP) Braunstein

235. Legal Issues in Information Management. (3) Three hours of lecture per week. Introduction to legal issues in information management, antitrust, contract management, international law including intellectual property, trans-border data flow, privacy, libel, and constitutional rights. (SP) Samuelson

237. Intellectual Property. (3) Three hours of lecture per week. The philosophical, legal, historical, and economic analysis of the need for and uses of laws protecting intellectual property. Topics include types of intellectual property (copyright, patent, trademark), the interaction between law and technology, various approaches (including compulsory licensing), and the relationship between intellectual property and competition. (SP) Staff


243. Document Engineering. (3) Students will receive no credit for 243 after taking 290, section 4 “Document Engineering”. Three hours of lecture per week. Prerequisites: Familiarity with XML syntax, schemas, and transform processors. This course is aimed at the discipline of document engineering for specifying, designing, and deploying the electronic documents that enable document-centric business transactions and applications, including web services and virtual enterprises. Topics include developing requirements, analyzing existing documents, identifying reusable components, modeling business processes, representing models using XML schemas, and using XML tools to implement and drive applications. (F,SP) Glushko

245. Organization of Information in Collections. (3) Three hours of lecture per week. Prerequisites: 202 or consent of instructor. Standards and practices for organization and description of bibliographic, textual, and non textual collections. Design, selection, maintenance, and evaluation of cataloging, classification, indexing, and thesaurus systems for specific settings. Codes, formats, and standards for representation and transfer of data. (SP) Larson

246. Multimedia Information. (3) Three hours of lecture per week. Prerequisites: 202, 204, or consent of instructor. Concepts and methods of design, management, creation, and evaluation of multimedia information systems. Theory and applications of audio, video, and hypermedia systems and applications. (SP) Davis

247. Information Visualization and Presentation. (3) Three hours of lecture per week. Prerequisites: 213, Computer Science 160, or consent of instructor. The design and presentation of digital information. Use of graphical information, sound, video, animation, and hypermedia in presenting information to the user. Methods of presenting complex information to enhance comprehension and analysis. Incorporation of visualization techniques into human-computer interfaces. (SP) Heurst

250. Computer-Based Communications Systems and Networks. (3) Three hours of lecture per week. Prerequisites: 206 or equivalent. Communications concepts, network architectures, design, operating systems, software and hardware, networks (e.g., LAN, wide), network protocols (e.g., TCP/IP), network management, distributed information systems. Policy and management implications of the technology. (F) Chuang

255. Foundations of Software Design. (4) Three hours of lecture and two hours of laboratory per week. Must be taken on a satisfactory/unsatisfactory basis. Prerequisites: An introductory programming course in a high-level programming language such as C, Java, C++, consent of instructor. Introduction to program-
ming paradigms, including 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 in information processing systems, including arrays, lists, strings, b-trees, and hash tables. Introduction to formal languages including regular expressions and context-free grammars. (F) Staff

257. Database Management. (3) Three hours of lecture per week. 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

271. Quantitative Research Methods for Information Systems and Management. (3) Three hours of lecture per week. Quantitative methods for data collection and analysis. Research design. Conceptualization, operationalization, measurement. Modes of data collection, including experiments, survey research, observation. Sampling, basics of data analysis. (SP) Staff


285. Design of Library Services. (3) Three hours of lecture per week. The organization and administration of library services and their place in the institutions and communities they serve. Governance, collections, and buildings. Planning, organizing, innovation, staffing, budgeting, controlling. Technological change, digital libraries. Political and economic aspects. (SP) Staff

290. Special Topics in Information Management and Systems. (1-3) Course may be repeated for credit. Two to six hours of lecture per week for seven and one-half weeks or one to three hours of lecture per week for 15 weeks. Prerequisites: Consent of instructor. Specific topics, hours, and credit may vary from section to section, year to year. (F,SP) Staff

290A. Special Topics in Information Management and Systems. (1) Course may be repeated for credit. Three hours of lecture for five weeks. (F,SP) Staff

295. Doctoral Colloquium. (1) One hour of lecture per week. The organization and administration of library services and their place in the institutions and communities they serve. Governance, collections, and buildings. Planning, organizing, innovation, staffing, budgeting, controlling. Technological change, digital libraries. Political and economic aspects. (SP) Staff

296A. Seminar. (2-4) Course may be repeated for credit as topic varies. Two to four hours of seminar per week. Prerequisites: Consent of instructor. Topics in information management and systems and related fields. Specific topics vary from year to year. May be offered as a one-semester sequence. (F,SP) Staff

297. Field Study in Information Management and Systems. (1-3) Course may be repeated for credit with consent of instructor. Regular consultation with faculty supervisor. Prerequisites: Must be enrolled in the School of Information Management and Systems and consent of instructor. 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 repeated for credit as topic varies. Weekly group meetings. Prerequisites: Consent of instructor. Group projects on special topics in information management and systems. (F,SP) Staff

299. Individual Study. (1-12) Course may be repeated for credit as topic varies. Format varies. Prerequisites: Consent of instructor. 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: Consent of instructor. Individual study in consultation with the major field advisor to provide an opportunity for qualified students to prepare themselves for the various examinations required of candidates for the Ph.D. degree. (F,SP) Staff

Integrative Biology

(College of Letters and Science)

Department Office: 3060 Valley Life Sciences Building, (510) 643-3728
Graduate Student Office: (510) 643-7330

Professor
Anthony D. Bamosky, Ph.D. University of Washington, Seattle. Mammalian paleobiology
George A. Brooks, Ph.D. University of Michigan. Exercise physiology and metabolism
Roy L. Caldwell, Ph.D. University of Iowa. Invertebrate behavioral neuroethology
Todd E. Dawson, Ph.D. University of Washington, Seattle. Physiology, genomics, and model system biology
Marian C. Diamond, Ph.D. University of California, Berkeley. Neuroanatomy, environment, immune functions, hormones
Robert Dudley, Ph.D. University of Cambridge. Biomechanics and comparative physiology
Robert J. Full, Ph.D. New York, Buffalo. Comparative biomechanics, physiology and functional morphology
Stephen E. Glickman, Ph.D. McGill University. Animal behavior, physiological substrates of behavior
Jon E. Hughes, Ph.D. University of California, Berkeley. Developmental endocrinology
Carole Hickey, Ph.D. University of Pennsylvania. Evolutionary paleobiology, morphology, systematics
Mary A. Koehl, Ph.D. University of California, Berkeley. Invertebrate functional morphology and biomechanics
David R. Lindberg, Ph.D. University of California at Santa Cruz. Evolutionary biology, ecology
Jere H. Lipps, Ph.D. University of California at Los Angeles. Paleobiology of marine environment
Brent D. Mishler, Ph.D. Harvard University. Bryology, systematics, population biology
Craig C. Moritz, Ph.D. Australian National University. Molecular ecology, community biology
Kevin Padian, Ph.D. Yale University. Paleobiology, evolutionary biology
Nipam Patel, Ph.D. Stanford University. Genetics and evolutionary studies of neurogenesis
Tom M. Parkinson, Ph.D. University of California, Berkeley. Oceanography/aquatic ecology
Mary E. Power, Ph.D. University of Washington. Freshwater ecology, food web
Ellen L. Simmons, Ph.D. Duke University. Plant ecology and evolution
Montgomery W. Staton, Ph.D. Harvard University. Evolutionary biology
Wayne P. Sousa, Ph.D. University of California at Santa Barbara. Population and community ecology
Glenns Thomson, Ph.D. University of Melbourne. Human and population genetics and evolution
Timothy S. Wolfe, Ph.D. University of Michigan. Ann Arbor. Human evolutionary studies
Irving Zucker, Ph.D. University of Chicago. Biological rhythms, hibernation, behavioral endocrinology
Max Alpert (Emeritus). Ph.D. Columbia University. Cytology
Zach M. Arnold (Emeritus), Ph.D. University of California, Berkeley. Functional morphology of fishes, amphibians, and reptiles, history of paleontology
Cedric T. Bellamy (Emeritus), Ph.D. University of California, Berkeley. Vertebrate paleontology
Joseph T. Greenstone, Ph.D. University of California, Berkeley. Paleontology of fishes, amphibians, and reptiles, history of paleontology
Cedric T. Bellamy (Emeritus), Ph.D. University of California, Berkeley. Vertebrate paleontology
Paul L. Licht (Emeritus), Ph.D. University of Michigan. Comparative endocrinology
William Z. Lidsky (Emeritus), Ph.D. University of Illinois at Urbana-Champaign. Mammalogy and ecology
Charles S. Nicoll (Emeritus), Ph.D. Michigan State University. Vertebrate paleontology, paleoecology
Robert A. Schrader, Ph.D. University of California, Berkeley. Vertebrate paleontology
James L. Patton (Emeritus), Ph.D. University of Arizona. Vertebrate paleobiology, paleoecology
Thelma E. Powell (Emeritus), Ph.D. Cambridge University. Vertebrate paleoecology, paleoecology
Catherine M. Sanders (Emeritus), Ph.D. University of California at Los Angeles. Vertebrate paleobiology, paleoecology

Associate Professors
David Ackerly, Ph.D. Harvard University. Plant and evolutionary ecology
George Bentley, Ph.D. University of Toronto, U.K. Avian evolutionary biology
Leslie J. Hsitu, Ph.D. Pennsylvania State University. Mammalian evolutionary biology
Nicolette King, Ph.D. Harvard University. Chondriformes, animal origins and genome evolution
Tyrone B. Hayes, Ph.D. University of California, Berkeley. Evolutionary mechanics of animal communication

Assistant Professors
Jeffrey A. Boore, Ph.D. University of Michigan. Comparative genomics and molecular evolution
David B. Wake (Emeritus), Ph.D. University of California, Berkeley. Developmental biology of vertebrates
Charles L. Nunn, Ph.D. Duke University. Mammalian behavior, infectious disease and comparative methods

Adjunct Professors
Tyrone B. Hayes, (Emeritus), Ph.D. University of California, Berkeley. Evolutionary biology
Donald M. Small, Ph.D. University of Maryland. Medical ecology

Assistant Adjunct Professors
Jeffrey A. Boore, Ph.D. University of Michigan. Comparative genomics and molecular evolution
T. J. Carlson, M.D. Michigan State University. Ethnobotany

Graduate Students
Harley L. Koening, Ph.D. University of California, Berkeley. Developmental biology of vertebrates
John W. Taylor, Ph.D. University of California at Davis. Vertebrate paleobiology

Chair: David R. Lindberg, Ph.D.
Graduate Affairs Office: (510) 643-7330

602. Individual Study for Doctoral Students. (1-5) Course may be repeated for credit. Must be taken on a satisfactory/unsatisfactory basis. Prerequisites: Consent of instructor. Individual study in consultation with the major field advisor to provide an opportunity for qualified students to prepare themselves for the various examinations required of candidates for the Ph.D. degree. (F,SP) Staff

Integrative Biology / 297

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 new questions, and answering traditional questions in new ways. The various fields within the department cooperate across disciplinary boundaries, sharing information and knowledge. Experience in laboratory and/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, biostatistics, ecology, systematics, paleobiology, paleoecology, 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 (e.g., dentistry, veterinary medicine, physical therapy, optometry, etc.) or allied careers in human biology (e.g., psychology, sociology, demography, political science, environmental and resource management), or for those interested in biology of organisms and wish to pursue graduate studies in various subdisciplines such as marine biology, ecology, behavior, paleontology, and evolution.
Lower Division. The foundation for this major includes a basic one-year course in biology: general chemistry, organic chemistry, physics, and mathematics. Courses in geology, physical sciences, statistics, and foreign languages and additional mathematics courses as well as a course in computer literacy are recommended.

Upper Division. In consultation with an adviser, students must complete at least three integrative biology courses designated as primary to the paths described under "The Major" below. In addition, students must complete a 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. Additional courses should be completed reflecting the students' interests and academic goals. This curriculum is designed to provide the intellectual tools and teaching methodologies to conduct multidisciplinary work in the areas of organismal biology.

Courses for Nonmajors

The department offers a series of courses for students not specializing in integrative biology. These courses provide instruction in the general principles of biology from a variety of viewpoints, ranging from the molecular level through behavior and evolution. Several offerings also cover areas different from the major courses listed below, providing a useful introduction for students considering a major in integrative biology. Each year, a variety of seminars are available for freshmen (IB 24) 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:

1. Biology 1A (4), 1B (4); Chemistry 1A (4), 3A (3), 3AL (2), 3B (3), 3BL (2); Mathematics 16A (3); Physics 8A (4), 8B (4).

Upper Division. At least three integrative biology courses may be substituted for those listed above. Recommended: additional courses in mathematics, statistics, geology, physical chemistry, biochemistry, history of biology, computer literacy and foreign language.

Required of all students in the major courses from the major courses listed below, providing a useful introduction for students considering a major in integrative biology. Each year, a variety of seminars are available for freshmen (IB 24) to introduce them to areas of integrative biology.

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 may be granted permission to enter the program. The Department of Integrative Biology offers a Ph.D. program. The program requires 90 units of course work, at least 30 of which must be taken in the Department of Integrative Biology. The remaining units are selected in consultation with an adviser to incorporate the results in a thesis. One year of a foreign language is also required as part of the Ph.D. program in integrative biology. Details of the program may be obtained from the web site: http://ib.berkeley.edu.

Research Facilities

The Botanical Garden, located on 34 acres in Strawberry Canyon, provides opportunities for research with living plants, supplies teaching material for classes on botany, and is an outdoor laboratory for students. Independent study and internship opportunities are available in horticulture, botany, and plant conservation. The garden is organized primarily by geographic region: California, South America, Mexico/Central America, South Africa, Australasia, Mediterranean, Eastern North America, and Western North America. Collections include succulents and cacti, carnivorous plants, orchids, ferns, roses, tropical plants, a Chinese medicinal herb garden, and an herb garden. Laboratory and greenhouse facilities are available at the Botanical Garden Plant Conservation Research Center. The garden is open to the public 9 a.m. - 5 p.m. daily, except for the first Tuesday of each month, March 26, April 9, May 7, 20, 25, September 29, October 20, November 17, December 1, and January 1 and Martin Luther King Jr. Day. Admission is free with current ID for Cal students, faculty, and staff. The Botanical Garden may be reached by campus shuttle on weekdays; paid parking is available. For further information about events, programs, and opportunities, go to http://botanicalgarden.berkeley.edu. Inquiries can be addressed to the director by mail at UC Botanical Garden, 200 Centennial Drive #5045, Berkeley, CA 94720-5045; by e-mail to garden@ucdavis.berkeley.edu, or by telephone to (510) 643-2755.

The Cancer Research Laboratory is a research laboratory on the Berkeley campus that carries on a research, teaching, and service program designed to foster interdisciplinary participation in cancer research. Some of the Department of Molecular and Cell Biology faculty are also members of the Cancer Research Laboratory. The central research program represents a multidisciplinary approach to understanding the mechanism of neoplastic transformation using a variety of systems. Graduate and postdoctoral research programs are supported in various areas of tumor biology: genetics, cell biology, signaling, cell culture, virology, immunology, molecular biology, and tumor virology. The Cancer Research Laboratory also operates five research facilities: (1) the Cytometry Facility for fluorescence activated cell sorting; (2) Molecular Imaging Facility with two-photon microscopes for image analysis; (3) Proteomic Mass Spectrometry Facility; (4) the NIA-MAF Microarray Consortium; and (5) the Gene Targeting Facility for construction of transgenic and chimeric mice. Instrumentation in the facilities is operated by highly trained staff who offer instruction in the methods and techniques associated with each facility. For more information, go to http://biology.berkeley.edu/crl.

The Field Station for Behavioral Research is a research institute that supports behavioral studies on animals under natural and seminatural conditions. Situated on 20 acres of wooded hillside at the top of Strawberry Canyon only two miles from the central campus, the field station maintains and observes a variety of animal species. Faculty from several Berkeley departments including Integrative Biology conduct research at the station. Its facilities are available for graduate and postdoctoral research with the approval of the director. People interested in the field station may contact the director via the Department of Integrative Biology.

The Gump South Pacific Research Station, French Polynesia, is located on Moorea, the sister island of Tahiti in the Society Islands. Modern dormitories, apartments, and laboratories allow long- and short-term research and education in a diverse array of fields, including marine, freshwater, and terrestrial biology, evolutionary and conservation biology, archaeology, anthropology, ethnobotany, geology, and geomorphology. The laboratory and greenhouse facilities are available at an open seafloor system, a modern dry laboratory with high-quality dissection and compound microscopes, and a molecular genetic unit, as well as equipment for UC Scientific Diving. The environment offers diverse habitats ranging from coral reefs, lagoons, coastal beaches, freshwater streams, wetlands, and mountain forests. The terrestrial vertebrate fauna is sparse but unique, while the terrestrial arthropod fauna and the local flora are diverse. The marine fauna is very rich, the habitats largely unexplored, and human activities are minimal. Efforts are underway to improve existing facilities in progress. For further information, contact Professor George Rodrick, Director, Department of Environmental Science, Policy, and Management, 203 Tice Hall, 2100 Piedmont, University of California, Berkeley, Berkeley, CA 94720-3112; rodrick@berkeley.edu, or Dr. Neil Davies, Research Director, ndavies@moorea.berkeley.edu. More information can be found on the station web site at http://moorea.berkeley.edu.

The Museum of Paleontology (UCMP), a research institute for faculty, staff, students, and qualified visiting scholars, has one of the largest collections of fossil protists, invertebrates, plants, and vertebrates in the nation, as well as large collections of modern vertebrate skeletal elements and invertebrates. The collection is worldwide in scope and is especially strong in materials from western North America. Research activities include systematic, paleobiogeographic, paleoecologic, biostatigraphic, evolutionary, and theoretical paleobiologic studies. Field work on all continents by researchers and students associated with the museum continues to sustain substantial growth. Special facilities include molecular biology and fossil preparation laboratories, as well as specialized laboratories for microfossils, pollen, and cast production.

UCMP has an active education and outreach program, using the web as its primary venue for shar-
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 53 reserves are open to all qualified individuals and institutions for scholarly work in disciplines ranging from ecology and environmental sciences to anthropology and art. For more information on the NRS, contact the UC Office of the President at (510) 987-5150 or go to http://nrs.ucop.edu/. For specific information regarding the two specially administered by the Berkeley campus, contact faculty reserve manager Mary Power at (510) 643-7776 or mpower@nature.berkeley.edu. The Berkeley campus administers these four reserves:

The Anglo 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 fold belts of the East River, the reserve contains the largest virgin Douglas fir community left in the state, as well as four undisturbed watersheds. Is part of the UNESCO World Heritage Site. For more information, contact Peter Steel at (707) 984-6653 or psteel@nature.berkeley.edu.

The Chickering 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 moisture regimes on sedimentary, igneous, and metamorphic substrates. It supports approximately 1,000 plant species, unusual red fir and mixed-conifer woodlands, and is home to a variety of large mammals. Long-term research continues on the endangered wolverine. Further information, contact John James at (510) 643-8559 or kirchner@umichomorberkeley.edu.

The Hans Jenny Pygmy Forest Reserve in Mendocino County supports elfin forests of endemic pygmy cypress, bishop pine, and unusual evergreen shrub species on highly podzolized, old-mine terraced 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 represents a representative sample of the chaparral-ridge 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 conducting important research on native grassland restoration. For more information, contact Mark Stromberg at 659-2684 or markstromberg@socrates.berkeley.edu.

Lower Division Courses

15. Natural History of Plants and Fungi, with Emphasis on California. (2) Two hours of lecture per week. Prerequisites: Open to all students; designed for those not specializing in the biological sciences, with breadth coverage of animal groups. Focus is on the natural history of the major plants and fungi of California. Term paper required. Staff (F,SP)

31. Animal Biology: A Behavioral View. (3) Students will receive no credit for 31 after taking C144 or Psychology 15B. Two hours of lecture and one hour of film/demonstration and one hour of discussion per week. Prerequisites: Open to all students; designed for those not specializing in biology. Formerly Zoology 15. Staff (F,SP)

32. Biomotion. (3) Two hours of lecture and one hour of discussion per week. Prerequisites: Open to all students. The goal of the course, Biomotion, is to involve students in the study of multidisciplinary, engineering design, and computer science by learning the principles of how animals move in their environments.

35AC. Human Biological Variation. (3) Three hours of lecture per week. This course addresses modern human biological variation from historical, comparative, and evolutionary perspectives. Focus is designed to introduce students to the fundamentals of comparative biology, evolutionary theory, and genetics. This course satisfies the American cultures requirement.

44. Marine Mammals. (2) Two hours of lecture per week. Prerequisites: Open to all students; designed for those not specializing in marine biology. Formerly Zoology 144. Staff (F,SP)

48. Calcifer. (2) Two hours of lecture per week. Prerequisites: Open to all students; designed for those not specializing in evolutionary biology, with emphasis on systematics, ecology, functional and developmental morphology, behavior, population and community ecology, and biogeography. Staff (F,SP)

3. Berkeley Seminars. (1) Berkeley Seminars are offered for credit as topic varies. One hour of seminar per week per unit for eight weeks. Staff (F,SP)

4. Biology Seminars. (1) Berkeley Seminars are offered for credit as topic varies. One hour of seminar per week per unit for weeks. Staff (F,SP)

5. Science Seminars. (2) Berkeley Seminars are offered for credit as topic varies. Two hours of lecture or discussion per week per unit for eight weeks. Staff (F,SP)

6. Medical Seminars. (2) Berkeley Seminars are offered for credit as topic varies. Two hours of lecture or discussion per week per unit for eight weeks. Staff (F,SP)

7. Integrative Biology Seminars. (1) Berkeley Seminars are offered for credit as topic varies. One hour of seminar per week per unit for eight weeks. Staff (F,SP)

8. Undergraduate Seminars. (2) Berkeley Seminars are offered for credit as topic varies. Two hours of lecture or discussion per week per unit for eight weeks. Staff (F,SP)

9. Graduate Seminars. (2) Berkeley Seminars are offered for credit as topic varies. Two hours of lecture or discussion per week per unit for eight weeks. Staff (F,SP)

10. Biomolecular Seminars. (2) Berkeley Seminars are offered for credit as topic varies. Two hours of lecture or discussion per week per unit for eight weeks. Staff (F,SP)

11. Biophysical Seminars. (2) Berkeley Seminars are offered for credit as topic varies. Two hours of lecture or discussion per week per unit for eight weeks. Staff (F,SP)

12. Biological Seminars. (2) Berkeley Seminars are offered for credit as topic varies. Two hours of lecture or discussion per week per unit for eight weeks. Staff (F,SP)

13. Biocomplex Seminars. (2) Berkeley Seminars are offered for credit as topic varies. Two hours of lecture or discussion per week per unit for eight weeks. Staff (F,SP)

14. Biophysical Seminars. (2) Berkeley Seminars are offered for credit as topic varies. Two hours of lecture or discussion per week per unit for eight weeks. Staff (F,SP)

15. Biology Seminars. (2) Berkeley Seminars are offered for credit as topic varies. Two hours of lecture or discussion per week per unit for eight weeks. Staff (F,SP)

16. Biological Seminars. (2) Berkeley Seminars are offered for credit as topic varies. Two hours of lecture or discussion per week per unit for eight weeks. Staff (F,SP)

17. Biological Seminars. (2) Berkeley Seminars are offered for credit as topic varies. Two hours of lecture or discussion per week per unit for eight weeks. Staff (F,SP)

18. Biological Seminars. (2) Berkeley Seminars are offered for credit as topic varies. Two hours of lecture or discussion per week per unit for eight weeks. Staff (F,SP)

19. Biological Seminars. (2) Berkeley Seminars are offered for credit as topic varies. Two hours of lecture or discussion per week per unit for eight weeks. Staff (F,SP)

20. Biological Seminars. (2) Berkeley Seminars are offered for credit as topic varies. Two hours of lecture or discussion per week per unit for eight weeks. Staff (F,SP)

21. Biological Seminars. (2) Berkeley Seminars are offered for credit as topic varies. Two hours of lecture or discussion per week per unit for eight weeks. Staff (F,SP)

22. Biological Seminars. (2) Berkeley Seminars are offered for credit as topic varies. Two hours of lecture or discussion per week per unit for eight weeks. Staff (F,SP)

23. Biological Seminars. (2) Berkeley Seminars are offered for credit as topic varies. Two hours of lecture or discussion per week per unit for eight weeks. Staff (F,SP)

24. Biological Seminars. (2) Berkeley Seminars are offered for credit as topic varies. Two hours of lecture or discussion per week per unit for eight weeks. Staff (F,SP)

25. Biological Seminars. (2) Berkeley Seminars are offered for credit as topic varies. Two hours of lecture or discussion per week per unit for eight weeks. Staff (F,SP)

26. Biological Seminars. (2) Berkeley Seminars are offered for credit as topic varies. Two hours of lecture or discussion per week per unit for eight weeks. Staff (F,SP)

27. Biological Seminars. (2) Berkeley Seminars are offered for credit as topic varies. Two hours of lecture or discussion per week per unit for eight weeks. Staff (F,SP)

28. Biological Seminars. (2) Berkeley Seminars are offered for credit as topic varies. Two hours of lecture or discussion per week per unit for eight weeks. Staff (F,SP)

29. Biological Seminars. (2) Berkeley Seminars are offered for credit as topic varies. Two hours of lecture or discussion per week per unit for eight weeks. Staff (F,SP)

30. Biological Seminars. (2) Berkeley Seminars are offered for credit as topic varies. Two hours of lecture or discussion per week per unit for eight weeks. Staff (F,SP)

31. Biological Seminars. (2) Berkeley Seminars are offered for credit as topic varies. Two hours of lecture or discussion per week per unit for eight weeks. Staff (F,SP)

32. Biological Seminars. (2) Berkeley Seminars are offered for credit as topic varies. Two hours of lecture or discussion per week per unit for eight weeks. Staff (F,SP)

33. Biological Seminars. (2) Berkeley Seminars are offered for credit as topic varies. Two hours of lecture or discussion per week per unit for eight weeks. Staff (F,SP)
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 a special field trip per term. Prerequisite: Biology 1A-1B. Must be taken concurrently with 104. Formerly Zoology 187 Laboratory and field study of local vertebrates exclusive of fish. (SP) Staff

106. Biological Oceanography. (3) Three hours of lecture per week. Prerequisites: Biology 1A-1B, 103, 123L, recommended, chemistry, and calculus. This course explores the interactions of organisms with physical, chemical, and geological processes in the ocean. Overviews of basic physical, chemical, and geological principles and oceanic groups of marine organisms are followed by interdisciplinary discussions of open-ocean pelagic systems, the deep sea, coastal oceans, estuaries, and intertidal environments. Grade is based on short written assignments.


106L. Laboratory in Biological Oceanography. (2) Three hours of scheduled laboratory plus three hours of unscheduled laboratory per week, one-day research cruise on San Francisco Bay, and one-day intertidal sampling trip. Prerequisites: Biology 1A-1B, 103, 123L, Plant Biology 120 and 120L recommended. Must be taken concurrently with 106. The laboratory will allow students to see and work with important functional groups of marine organisms and to learn and use standard oceanographic methods in experiments. Enrollment limit is 16 per laboratory section.

108. Principles of Paleontology. (4) Three hours of lecture and one hour of discussion per week. Prerequisites: A course in paleontology or in a related science. An introduction to principles and methods in paleontology and palaeobiology. This course provides an overview of the information content of the fossil record. We will examine the nature of fossil species, populations, communities, ecosystems, and biodiversity. Paleontology, paleoecology, systematics, and macroevolution. Discussion sections are designed to help students read and evaluate paleontological literature and to develop critical thinking and writing skills. Laboratory exercises for studying fossils. (SP) Hickman

112L. 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

117. Medical Ethnobotany. (2) Two hours of lecture per week. Biomedical and ethnolinguistic principles and practical applications of the world. Major topics covered in this course include cultural origins of medicinal plant knowledge on plant-derived pharmaceuticals and phytomedicines; ethnobotanical research methods in ethnobotany and ethnopharmacology; examples of how traditional botanical medicines provide safe, effective, affordable, and sustainable primary health care to tropical countries; human physiology, pathophysiology, and mechanisms of action of plant-derived drugs. (F) Carlson

117L. Medical Ethnobotany Laboratory. (2) Six hours of laboratory per week. Laboratory 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, habitats, and ethnomedical uses of medicinal plants. How the medicinal plant is prepared, administered, and used as a phytomedicine will also be discussed. There will be reference to the phylogeographic distribution of the organisms represented by the medicinal plants. (F) Carlson

119. Evaluating Scientific Evidence in Medicine. (3) Students will receive no credit for 119 after taking Public Health 150A-150B. Two hours of lecture, one computer laboratory, and one discussion per week. Prerequisites: An introductory biology course. The course will critically analyze medical reports and studies using recent controversial topics in medicine. Course will focus on information gathering, hypothesis testing, evaluation of design, methodology, statistical significance, conceptions of bias, interpretation of results, statistics, and attribution of causation.

123A. Exercise Physiology. (3) Three hours of lecture per week. Prerequisites: A college-level course in human physiology with laboratory and Chemistry 1A. Formerly Human Biodynamics 105A. 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 Exercise Physiology and Metabolism. (1) Three hours of laboratory per week. Prerequisites: 132 and 102L. This laboratory will provide an introduction to the laboratory 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: 132B, 123AL. Formerly Human Biodynamics 105B. Discussions of the effect of exercise on skeletal muscle; exercise and cardiovascular disease; exercise in the heat, cold, under water; altitude; nutrition and performance; effects of drugs on performance; blood doping; sex differences and performance.

123BL. Laboratory Exercises and Demonstrations in Environmental and Exercise Physiology. (1) Three hours of laboratory per week. Prerequisites: 123A, 123AL. Formerly Human Biodynamics 106. Analysis of mechanisms of nerve and muscle excitation and muscle contraction, and their occurrence during fatigue and recovery. Laboratory demonstrations and exercises will explain by example, the lecture content.

126. Neuromuscular Fatigue. (3) Three hours of lecture per week. Prerequisites: 123A, 123AL. Formerly Human Biodynamics 108. Analysis of mechanisms of nerve and muscle excitation and muscle contraction, and their occurrence during fatigue and recovery. Laboratory demonstrations and exercises will explain by example, the lecture content.

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). 121 and 124 are recommended. Must be taken concurrently with 127L. We will develop a basic understanding of modern theories of information and control, then analyze neuromotor systems to understand the elements of motor control systems; muscles, sensory transducers and motor systems of the brain. We will also develop an understanding of how muscles synthesize knowledge of the elements into understanding of the control systems that regulate posture, locomotion, and voluntary movement. (F) Lehman

127L. Motor Control Laboratory. (1) Two hours of laboratory per week. Prerequisites: 131 or equivalent; a course in physiology (132 or equivalent, Molecular and Cell Biology 32). 121 and 124 recommended. Must be taken concurrently with 127. We will develop a basic understanding of motor control systems and control through examples and simulations. Laboratories will also explore sensory pathways, muscle mechanics, and sensor-motor integration in intact humans. (F) Lehman

128. Sports Medicine. (3) Three hours of lecture and one hour of discussion per week. Prerequisites: Back-
ground in anatomy, physiology, or exercise physiology recommended. Formerly Human Biodynamics 107: Analysis of the causes and situations of injuries in physical activities; strategies in the prevention, recognition, management, and rehabilitation of sports-related injuries. (SP) McAuliffe

C129. Human Physiological Assessment. (3) Two hours of lecture and three hours of laboratory per week. Prerequisites: 123A, 123AL (may be taken concurrently). 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 variables (cardiorespiratory endurance, body composition, and muscular strength). Also listed as Physical Education C129. (SP) Johannessen

130. Evolutionary and Functional Vertebrate Morphology. (4) Three hours of lecture and one hour of discussion per week. Prerequisites: Biology 1A-1B, or consent of instructor; concurrent enrollment in 130L. The study of the evolution of vertebrates; analysis of patterns of evolution of vertebrates using morphological data and the comparative method.

130L. Laboratory in Evolutionary and Functional Vertebrate Morphology. (2) Six hours of laboratory per week. Prerequisites: Biology 1A-1B, or consent of instructor. Laboratory on the structure and function of vertebrates; analysis of patterns of evolution of vertebrates using morphological data and the comparative method.

131. General Human Anatomy. (3) Three hours of lecture and two hours of laboratory per week. Prerequisites: Biology 1A-1B or Chemistry 1A formerly Anatomy 108. 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 pass/no pass basis. A series of 15 lectures by former students of 131 who have become successful physicians and surgeons. The purpose is to provide students with an introduction to 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. (May be taken concurrently with 131 or following 131 required). Formerly Anatomy 108L. Prepared human dissections, models and microscopic slides. (SP) Staff

132. Survey of Human Physiology. (3) Students will receive no credit for 132 after taking Physiology 100 or 130. Three hours of lecture and one hour of discussion per week. Prerequisites: 131. Mechanisms of human life processes; study of function of cells, tissues, and organ systems. (SP) Staff

132L. Mammalian Physiology Laboratory. (2) Students will receive no credit for 132L after taking Molecular and Cellular Biology 32L or 136L, or if currently enrolled in similar courses. Three hours of laboratory per week. Prerequisites: Previous or concurrent enrollment in 132. Three hours of laboratory per week. Prerequisites: Previous or concurrent enrollment in 132. The laboratory will conduct exercises that demonstrate physiological principles involving cardiovascular, respiratory, renal, neuromuscular, and other functions. Students will also be introduced to the equipment and physiological principles that the equipment is designed to measure. In addition, students will be expected to attend up to two hours per week of open laboratory work on experimental design, data analysis, and preparation for oral presentation of the results of their individual research projects under the guidance of the course staff. They will also receive instruction in the statistical techniques they will be using in designing experiments to test those hypotheses. (SP) Staff

133. Anatomy Enrichment Program. (2) Course may be repeated for credit. Fieldwork—minimum of four hours per week arranged. Must be taken on a pass/no pass basis. Prerequisites: A or B grade in 131. Formerly Anatomy 197. The purpose of the course is for University students to teach human anatomy to grades K-7 in the public schools. The UC Berkeley students work in groups of 2-3 to plan their presentations of the systems of the body and then enter the school classrooms and teach what they have learned in 131. (SP) Diamond

134. Principles of Integrative Morphology. (4) Three hours of lecture and one hour of discussion per week. Prerequisites: Junior or senior standing, Biology 1A-1B. Concepts, issues, and practical approaches to analysis of evolutionary processes. Policy: C, D, E. Molecular and Cellular Biology 140 or 142, 160 recommended. Formerly Physiology 115B. An introduction to comparative animal behavior and behavioral physiology in an evolutionary context. Emphasis will be placed on how variation in neural, muscular, endocrine, cardiovascular, respiratory, digestive and osmoregulatory systems evolves, and the nature and basis of differences among animal phyla. General physiological principles will be illustrated by examining variation in neural, muscular, endocrine, cardiovascular, respiratory, digestive and osmoregulatory systems.

C140. Mammalian Physiology. (4) Students will receive no credit for C140 after taking 140A. Three hours of lecture and one hour of discussion per week. Prerequisites: Biologies 1A-1B, Chemistry 1A, Chemistry 1B. Formerly Anatomy 108L. The structure and function of vertebrates; analysis of patterns of evolution of vertebrates using morphological data and the comparative method.

C141. Human Physiological Assessment. (3) Two hours of lecture and one hour of discussion per week. Prerequisites: Biology 1A-1B, or consent of instructor; concurrent enrollment in 141L. An introduction to human physiological assessment, including people. Emphasis on neuroendocrine subsystems and their role in the need for a pluralistic science of form integrating logical morphology, and evolutionary morphology. Examples from model systems and strong emphasis given to the need for a pluralistic science of form integrating the disparate sub-disciplines.

135. The Mechanics of Organisms. (4) Three hours of lecture and one hour of discussion per week. Prerequisites: Introductory physics and biology recommended. Organism design in terms of mechanical principles of fluid and solid mechanics with examples of their biological implications, stressing 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-1B; human physiology (132) strongly recommended. Course will address the role of hormones in physiology with a focus on human. 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, and participation in fertility and sexual dysfunction; conception and contraception; pregnancy and abortion; birth and lactation; sexual differentiation of brain and reproductive organs; homosexuality and heterosexuality. (F) Hayes

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 32L, 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-pharmacology of copulation; birth control, sexual practices, and implications in fertility and sexual dysfunction; conception and contraception; pregnancy and abortion; birth and lactation; sexual differentiation of brain and reproductive organs; homosexuality, and androgenization in humans. (SP) LeDuc

C142. Introduction to Human Osteology. (6) Six 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 identity, emphasizing methodology and analysis of human populations from archaeological contexts; introduction to use of statistics in osteological analysis. Also listed as Anthropology C103.

143A. Biological Clocks: Physiology and Behavior. (4) Three hours of lecture and one hour of discussion per week. Prerequisites: Completion of biological prerequisites for the major and one of the following: Psychology 111 or a course in animal organization, or Anatomy and Physiology 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 on neuroendocrine substrates, development and adaptive significance of estrous cycles, feeding rhythms, sleep-wakefulness cycles, reproductive and hibernation cycles, body weight and migratory cycles. Also listed as Psychology C113.

143B. Hormones and Behavior. (3) Two hours of lecture and one hour of discussion per week. Prerequisites: Completion of biological prerequisites for the major and consent of instructor; a course in mammalian physiology recommended. Neural and endocrine mechanisms underlying behavior, especially reproduction, of non-human mammals. Process of sexual differentiation of the neuroendocrine system will be emphasized. Hormonal influences on feeding, mating, dominance, and aggressive behavior. Also listed as Psychology C116.

C144. Animal Behavior. (4) Students will receive no credit for C144 after taking 146. Three hours of lecture, one hour of discussion, and one hour of demonstration per week. Prerequisites: Biology 1A-1B or Environmental Science, Policy, and Management 140. Molecular and Cell Biology 140 or 142, 160 recommended. Formerly Physiology 115B. An introduction to comparative animal behavior and behavioral physiology in an evolutionary context. Emphasis will be placed on analysis of behavior, genetics and development, learning, aggression, reproduction, adaptiveness, and physiological substrates. Two midterms and a final examination. Also listed as Psychology C116. (F) Staff

146. Behavioral Ecology. (3) Students will receive no credit for 144 for 146 after taking 146. Two hours of lecture and two hours of laboratory 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, game theory, patterns of parental care, mating systems, group living, and cooperative behavior. Labs introduce methods of data collection used in behavioral research. Also listed as Psychology C116. (F) Staff

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 major physiological systems among different animal groups. General physiological principles will be illustrated by examining variation in neural, muscular, endocrine, cardiovascular, respiratory, digestive and osmoregulatory systems.

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. Prerequisites: C163, 161, or Molecular and Cell Biology C142 (may be taken concurrently), or consent of instructor. Formerly 149. This course focuses on the use of molecular genetic information in ecology. Applications and techniques covered range from analysis of parentage and relatedness (DNA fingerprinting and multilocus genetic analysis) through gene flow, biogeographic history and community composition (comparative DNA sequencing) to analysis of diet and trophic interactions (biological isotope). Grades are assigned based on final exam, one on essay and a critique of a recent research paper. Also listed as Environmental Science, Policy, and Management C149. Offered alternate years.

C149L. Molecular Ecology Laboratory. (2) Six hours of laboratory per week. Prerequisites: 149, or consent of instructor. Required for 149L. Formerly 149L. This laboratory course is intended to provide hands-on training in techniques commonly used in molecular ecology and genetics. Techniques to be covered include DNA extraction, agarose gel electrophoresis, PCR amplification, RFLP and AFLP analysis, DNA sequencing, and microsatellite screening. Some literature will be discussed and students will also gain experience in the analysis and interpretation of these types of genetic data. During the latter part of the course, students will work in small groups to complete an independent laboratory project and present the results to the class. Grades will be based on laboratory notebooks, homework assignments, and independent projects. Also listed as Environmental Science, Policy, and Management C149L.

151. Plant Physiological Ecology. (3) Three hours of lecture per week. Prerequisites: Consent of instructor (an introductory course in ecology, plant physiology, and biochemistry is very helpful). This course is a detailed survey of 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...
151L. Plant Physiological Ecology Laboratory. (2) Five hours of laboratory per week, plus one weekend field trip is required. Prerequisites: Concurrent enrollment in 151. 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 in the greenhouse. Offered alternating odd years. (SP) Dawson

152. Marine Pollution. (4) Three hours of lecture and one hour of discussion per week. Prerequisites: Consent of instructor. The environmental fate and effects of human wastes, particularly toxic chemicals, in estuarine and coastal systems. Course will review waste treatment systems, principal sources, their impacts on marine communities, monitoring approaches, and regulatory issues. (SP) Weston

153. Population and Community Ecology. (3) Three hours of lecture and one hour of discussion per week. Prerequisites: Biology 1B or consent of instructor. Principles of microbial, animal, and plant population ecology, illustrated with examples from marine, freshwater, and terrestrial ecosystems. Consideration of the roles of physical and biological processes in structuring natural communities. Observational, experimental, and theoretical approaches to population and community ecology will be included. The course will use a variety of approaches relying on algebra and elementary calculus. Discussion section will review recent literature in ecology. (F) Staff

153L. Laboratory in Population and Community Ecology. (3) Eight hours of laboratory per week, plus two or three weekend field trips. Prerequisites: 153 (may be taken concurrently) or consent of instructor; introductory course in statistics strongly recommended. Introduction to field and laboratory study of ecological processes and patterns in nature. Course begins with a series of group field exercises conducted in local terrestrial, aquatic, and marine habitats. These exercises emphasize sampling methodology, experimental design, and statistical interpretation of results. Lab will meet one hour per week. Prerequisites: Biology 1A-1B. Students may take the laboratory with or without enrollment in 153. Three hours of lecture and one hour of discussion per week. Prerequisites: Biology 1A-1B. Students may take the lecture without enrolling in the lab, but if students wish to enroll in the lab, they must sign up for the lecture course. Consideration of the principles of population ecology at the population and community levels. Topics include population dynamics, life histories, plant/animal interactions, and community structure and development. Readings and supplementary information will be discussed in a one-hour discussion section each week. Enrollment limited to 40. (SP) Dawson

154L. Laboratory in Plant Population and Community Ecology. (2) Four hours of laboratory per week and two or three 1-day field trips. Prerequisites: Biology 1A-1B or equivalent. A laboratory course devoted to a survey on a world-wide basis of vascular plants and their evolution. (SP) Baldwin

155L. Plant Physiological Ecology Laboratory. (2) Five hours of laboratory per week, plus one weekend field trip. Prerequisites: Biology 1B or consent of instructor. Formerly 155L. In this field-oriented course, we will visit sites representative of diverse grassland, chaparral, scrub, forest, desert, river, marsh, and intertidal ecosystems of California. We will study the physical characteristics of two different plant species that occur at a given field site. Our first site will introduce students to the natural history and ecological patterns at sites. During a second meeting on campus, we will give a 1.5 hour lecture and one hour of discussion about research processes and methods exemplified at a given site. Methods for field investigations will also be discussed and demonstrated. During the third meeting, we will also collect, measure, and plant samples at the site. Students will collect quantitative data that test hypotheses about species distribution and abundances. Course requirements will include an individual research project, plus one week of harassment with a scientific paper on a topic of student’s choice. An oral presentation of a class symposium is required. (SP) Dawson

C156. Biology and Geomorphology of Tropical Islands. (13) Nine hours of lecture for 6 weeks; field projects for 6 weeks; three hours of lecture for 3 weeks. Natural history and evolutionary biology of island terrestrial and freshwater organisms, and of marine organisms in the coral reef and lagoon systems will be studied, and the geomorphology of volcanic islands, coral atolls, and their coastal zones will be examined. Features of island biogeography will be illustrated with topics linked to subsequent field studies on the island of Moorea (French Polynesia), Also listed as Environ Sci, Policy, and Management C107. (F) Staff

160. 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. History and philosophy of evolutionary thought; the different lines of evidence and fields of inquiry that bear on the understanding of evolutionary processes. The major features and processes of evolution through geological times; the generation of new forms and new lineages; extinction; population processes of selection, adaptation, and other forces; genetics, genomics, and the molecular basis of evolution; evolutionary developmental biology; sexual selection; behavioral evolution; applications of evolutionary biology to medical, agricultural, conservational, and anthropological research. (F) Moore, Montz, Padian

162. Ecological Genetics. (4) Three hours of lecture and one hour of discussion per week. Prerequisites: Biology 1A-1B. This course will bridge the gap between ecology, genetics, and evolutionary biology. It will present a contemporary understanding of studying evolution in natural populations, including analyzing heritability of ecologically important traits, using molecular techniques to decompose genotypes, documenting and measuring the components of genetic systems, and using models to predict evolution in natural populations. Case studies will be used to examine evolutionary effects of ecological interactions among organisms, the importance of population size and structure, and interactions among populations through migration and dispersal. (SP) Baldwin

C163. Survey of General Genetics. (4) Students will receive no credit for C163 or Molecular Cell Biology C142 after taking 141 or Molecular and Cell Biology C140. 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 C142. A survey of the history and genetics and a primary emphasis upon mechanisms of heredity and molecular genetics. Includes some treatment of evolutionary genetics. Also listed as Molecular and Cell Biology C142. (F) Beckendorf, Calendini

165. Introduction to Quantitative Genetics. (4) Two hours of lecture, one hour of discussion, and one hour of computer laboratory per week. Prerequisites: 161 or 162, Biology 1B, or equivalent basic statistics. Quantitative genetic theory extends the consequences of Mendelian inheritance to characters that are affected by many genes. Such characters are often continuously distributed and include most ecologically important traits. This course will introduce basic concepts in quantitative genetics including breeding values, components of phenotypic variance and history and of phenotypic resemblance between relatives, estimation of heritability and other genetic parameters, analysis of quantitative trait loci, prediction of response to selection, and measurement of multilocus quantitative genetic models for the evolution of ecologically interesting characters. (F) Simms

166. Evolutionary Biogeography. (4) Three hours of lecture and one hour of discussion per week. Prerequisites: Geography 11, 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 biogeographic techniques and applications for studying the interplay between geographic 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 influence and 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, food webs, 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 commonly are used to study interactions between biogeographic and evolutionary processes, extinction, and environmental change. (SP) Barrosky

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 philosophy and process; the public’s view of the search; planetary formation; history of the solar system and the planets and satellites; early earth history and the history of life on earth as revealed in molecular and paleontological data; the processes of biological evolution; planning for a Martian landing; a critical evaluation of supposed indications of extraterrestrial life; and the ethical and theological considerations of planetary exploration. (SP) Staff

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 botanical classification, taxonomy, and an introduction to botanical systematics. An outline of the major groups of vascular plants and their evolution. (SP) Baldwin

168L. Systematics of Vascular Plants Laboratory. (2) Six hours of laboratory per week. Prerequisites: Biology 1A-1B. Must be taken concurrently with 168. A laboratory course devoted to a survey on a world-wide basis of vascular plant families. (SP) Baldwin

173. Mammalogy. (2) Two hours of lecture per week. Prerequisites: 104. Must be taken concurrently with 173L. Formerly Zoology 163 An advanced lecture course in the biology of mammals. (SP) Baldwin

173L Mammalogy Laboratory. (3) Six hours of laboratory per week, plus two 3-day field trips. Prerequisites: 104. Formerly Zoology 163 An advanced laboratory and field course in the biology and diversity of mammals. (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

174L. Ornithology Laboratory. (2) Six hours of laboratory per week, plus one weekend field trip. Prerequisites: Must be taken concurrently with 174. An introduction to the diversity, morphology, and general ecology of birds of the world. (SP) Staff

175. Herpetology. (2) Two hours of lecture per week. Prerequisites: 104. Must be taken concurrently with 175L. Formerly Zoology 165 Lectures and assigned

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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 at the population, community, and ecosystem levels. (SP) Dawson
readings will introduce students to the diversity of am- phibians and reptiles on a world-wide basis, with emphasis on behavior, ecology, functional morphology, and evolutionary history. Grade is based on two assignments (midterm, final) and an independent re- search paper.

175L. Herpetology Laboratory. (2) Four hours of lab- oratory per week, plus two field trips. Prerequisites: 104. Must be taken concurrently with 175. Formerly Zoology 185 Laboratories will teach students the di- agnostic characters and some functional attributes of amphibians and reptiles on a world-wide basis. Field trips will acquaint students with techniques for collecting, preserving, identifying, and studying amphib- ians and reptiles.

180. Micropaleontology (2) Two hours of lecture per week. Prerequisites: 182 and 182L, or a course in Marine Geobiology is recommended. Must be taken concurrent- ly with 180L. Formerly lecture portion of Paleon- tology 115 Marine Protists that are common in the fos- sil record, including planktonic benthic and larger foraminifera, diatoms, radiolarians, dinoflagel- lates, and coccolithophores. The biology, ecology, deposition, preservation, biostatigraphy, paleoecography, and special research applications of each group will be considered.

180L. Micropaleontology Laboratory. (3) Six hours of laboratory per week. Prerequisites: 182 and 182L; 185 Recommended. Must be taken in conjunction with 180L. Lecture and laboratory portion of Paleonto- logy 115 Laboratories demonstrating and studying marine Protista of the fossil record, including planktonic benthic and larger foraminifera, diatoms, radiolarians, dinoflagel- lates, and coccolithophores. Taxonomy, evolution, stratigraphy, palaeoecology, preservation, and research applications will be the focus.

183. Evolution of the Vertebrates. (3) Must be taken concurrently with 183L. Three hours of lecture per week. Prerequisites: Biology 1B; introductory courses in earth history and vertebrate paleontology are recommended. For- merly lecture portion of Paleontology 125. An intro- duction to vertebrate paleontology, focusing on the his- tory and phylogeny of vertebrates ranging from fishes to humans. Emphasis is on evolution, taxonomic, and functional morphology, faunas through time, and problems in vertebrate history, including diversity through time and extinction.

183L. Laboratory in Vertebrate Evolution. (1) Must be taken concurrently with 183L. Two hours of labora- tory per week. Prerequisites: Biology 1B; introductory courses in earth history and vertebrate paleontology are recommended. Formerly laboratory portion of Paleon- tology 125. An introduction to vertebrate fossils, focusing on demonstration and study of problems related to tax- onomy, evolution, functional morphology, structure, and preservation of fossil vertebrates and their faunas through time. Offered alternate years.

184. Morphology of the Vertebrate Skeleton. (2) Two hours of lecture per week. Prerequisites: 30, 33, or 34 and 34L; or Anthro 1. Formerly Paleontology 184. Lectures on comparative os- teology of vertebrates, with emphasis on selected groups of terrestrial vertebrates considered in paleo- ontological, paleoclimatological and biostatigraphic analyses.

184L. Laboratory on the Vertebrate Skeleton. (2) Must be taken concurrently with 184L. Six hours of labor- atory and one hour of discussion per week. Prere- quisites: Biology 1B or Biology 19 or Anthro 11 1. Formerly Paleontology 126. Laboratory on com- parative osteology of vertebrates, with emphasis on se- lected groups of vertebrates. Structure, anatomy, mor- phology, development and growth of the vertebrate skeleton. Offered alternate years.

C185. Human Paleontology. (5) Three hours of lec- ture and three hours of laboratory per week. Prere- quisites: Anthropology 1, Biology 1A-1B. Origin and re- lationships of the extinct forms of mankind. Also listed as Anthropology C100. (SP) White

186. Evolution of Hominid Behavior. (4) Three hours of lecture and one hour of discussion per week. Pre- requisites: Biology 1A and Biology 1B or Anthropology 1 and Anthropology 2. Anthropology 100 or Integrative Biology 185 must also be taken, but can be taken con- current with the consent of instructor. Evidence from evolutionary theory, comparative primatology, com- parative anatomy, taphonomy, lithic technology, faunal analysis, sedimentology, and paleoenvironmental stud- ies. Discussion section in Hearst 18 laboratory for hands-on evaluation of technological and anatomical evidence.

194. Graduate Student Instructor for Inte- grative Biology Courses. (1-3) Course may be re- peated for credit. Three to four hours of lecture per week. May be taken on a pass/no pass basis. Prerequisites: Completing an incomplete course or applying to UGSI with a grade of B or better; or consent of instructor. UGSI will work under supervision of in- stuctor and/or GSI. The UGSI will attend all manda- tory preparatory meetings, be available in the classroom (discussion or laboratory) to respond to student questions, facilitate lesson plans, perform other tasks as assigned. UGSI s do not evaluate students’ work or assign grades. (F,SP) Staff

H196A-H196B. Thesis Course. (3,3) Course may be repeated for credit. Individually arranged. Prerequisites: Open only to students in Honors Program. Formerly Zoology 196A, Botany 195 Individual study and re- search for at least one academic year on a special problem to be chosen in consultation with the student and the staff; preparation of the thesis on broader aspects of this work. (F,SP) Staff

197. Supervised Field Studies By Upper Division Students. (1-4) Course may be repeated for credit. Meetings with instructor. Prerequisites: 182L, 182L or permission of Lawerence Hall of Science. Formerly Paleontology 197, Zoology 197 Supervised experience in off-campus field work. Regular meetings with instructor and written re- port. (F,SP) Staff

198. Supervised Group Study and Research By Upper Division Students. (1-4) Course may be re- peated for credit. Must be taken on a passed/not passed basis. Formerly Physiology 198, Anatomy 198. Paleontology 198 Undergraduate research by small groups. (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 ba- sis. Prerequisites: Background courses in chosen sub- jects. Formerly Paleontology 199, Zoology 199, Botany 199, 199L. Enrollment restrictions apply; see department. (F,SP) Staff

Graduate Courses

200A. Principles of Phylogenetics: Systematics. (4) Three hours of lecture and three hours of laboratory per week. The core theory and methodology for phy- logenetic systematics with emphasis on both mor- phology and molecules, and both living and fossil or- ganisms. Topics include homology, character analysis, competing optimality criteria, classification, and a brief introduction to comparative methods. Laboratories are closely integrated with lectures and cover the major al- gorithms and software. Requirements include a prac- tical term project. Note: this course and 200B may be taken in either order or alone. Offered even-numbered years.

200B. Principles of Phylogenetics: Ecology and Evolution. (4) Three hours of lecture and three hours of laboratory per week. The uses of phylogenetic trees in comparative biology. Covers the many applications of phylogenetics to biogeography, specialization, con- servation, population genetics, ecology, behavior, de- velopment, functional morphology, and macroevolution that are revolutionizing those fields. Laboratories are closely integrated with lectures and cover algorithms and software. Requirements include a practical term project. Note: this course and 200A may be taken in ei- ther order or alone. Offered odd-numbered years. (SP) Mishler

C204. Research Reviews in Animal Behavior: Be- havior Review. Course may be repeated for credit. One and one-half hours of seminar per week. Prere- quisites: Graduate standing, basic course in animal behavior, and consent of instructor. Formerly IDS 204. This course will discuss current publications in animal behavior. A student will summarize a paper and lead the discussion that follows. Occasionally, the group re- 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 will present at least once each semester. Formerly Zoology 204 and Environ Sci, Policy, and Management C204. (F,SP) Staff

C205. Quantitative Methods for Ecological and En- vironmental Modeling. (3) Three hours of lecture per week. Prerequisites: Consent of instructor. This course is designed to provide a general statistical in- strumental training for students interested in pursuing ecological and environmental modeling. Topics include linear algebra, difference equation, ordinary differential equations, and partial differential equations; stochastic processes; parameter estimation; and a number of statistical techniques. This course will be recommended as a prerequisite for advanced model- ing courses in Integrative Biology, Energy and Re- sources Group, and Environmental Science, Policy, and Management. Also listed as Environ Sci, Policy, and Management C205 and Energy and Resources Group C205. (F) Staff

C215. Communicating Ocean Science. (3) Two and one-half hours of lecture per week. Prerequisites: petition with 180L. Formerly lecture portion of Paleon- tology 115 Marine Protists that are common in the fos- sil record, including planktonic benthic and larger foraminifera, diatoms, radiolarians, dinoflagel- lates, and coccolithophores. The biology, ecology, deposition, preservation, biostatigraphy, paleoecography, and special research applications of each group will be considered.


222. Seminar in Locomotion Energistics and Bio- mechanics. (2) Two hours of seminar per week. Prerequisites: 124, 124L, 125, 125L or equivalent or consent of instructor. Formerly Human Biodynamics 210 Seminar and critiques current literature and current topics in the biomechanics and energetic cost of locomotion. Emphasis on terrestrial legged loco- motion. Topics include efficiency, musculoskeletal de- sign, energy saving mechanisms, muscle mechanics, gaits, effects of aging, and control aspects.

223. Seminar in Physiological Bases of Physical Activity. (2) Course may be repeated for credit. Two hours of seminar per week. Prerequisites: 123A, 123AL. Formerly Human Biodynamics 210. Formerly Human Biodynamics 200. Importance of anatomical limits and physiological limits and work capacities as a function of age, sex, diet, environmental factors, and nature of ac- tivity.

225. Seminar in Motor Control. (2) Course may be repeated for credit. Two hours of seminar per week. Prerequisites: 127, 127L. Formerly Human Biody- namics 210. The control of normal human movements, with emphasis on physiological mechanisms: structure and mechanical properties of muscle, anatomy and function of proprioceptors, spinal pattern generation and reflexes, motor systems of the brain. Analysis of these mechanisms in control of posture, locomotion, and simple voluntary movements. Critical review of current literature in motor control. (F) Lehman

230. Marine Science Review. (1) One hour of semi- nar per week. Must be taken on a satisfactory/unsat- isfactory 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 literature in biomechanics which include solid and fluid mechanics, locomotion, and energetics. (F.S.P) Staff

234. Seminar on Biology of Amphibians and Reptiles. (1) 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 206 Current problems, questions, and techniques in morphology. Topics will vary from year to year.

241. Endocrine Disruptors. (3) Three hours of lecture per week. This course will examine intentional endocrine disruption, such as the use of pharmaceuticals to regulate hormones in humans, livestock, and wildlife. We will examine endocrine disruptants and their impacts on wildlife and humans, including their potential role in cancer. (SP) Hayes

245. Functional Neuroanatomy. (2) Two hours of lecture per week. Prerequisites: Consent of instructor. Formerly Anatomy 203 Development, structural (gross and microscopic) and functional relationships of the mammalian central nervous system. (SP) Diamond

245L. Functional Neuroanatomy Laboratory. (2) Six hours of laboratory per week. Prerequisites: Consent of instructor. Formerly 245 and Anatomy 203. Histological examination of the human nervous system; gross dissection of the human brain. (SP) Diamond

247. Seminar on Controversies in Comparative Physiology. (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. Formerly Zoology 232 Topics to vary. Report and discussion of current literature.

248. Comparative Physiology and Endocrinology 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. Formerly Biology 221 Reviews and reports of current research in vertebrate endocrinology and physiology. (F.S.P) Staff

249. Seminar on Evolutionary Genetics. (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 Zoology 249 Evolutionary genetics. Concepts in evolutionary genomics will be discussed in a seminar format.

250. Seminar in Ecology. (2) Course may be repeated for credit. Two hours of seminar per week. Prerequisites: 153. Readings and discussion of current topics. (F.S.P) Staff

251. Ecological Research Reviews. (1) Course may be repeated for credit. One and one-half hours of seminar per week. Must be taken on a satisfactory/unsatisfactory basis. Prerequisites: Graduate standing and consent of instructor. Formerly 254. Reports and discussions of original research. (F.S.P) Staff

253. Advanced Topics in Theoretical Ecology. (3) Three hours of lecture per week. Prerequisites: Consent of instructor. Applications of recent 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.

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. Introduction to the diversity of methods and techniques used in ecology and environmental biology. It will focus on major areas of research such as environmental science, population and community ecology, evolutionary biology, ecosystem behavior, and the study of microorganisms and plants in natural environments. (F.S.P) Staff

257. Symposium in Behavioral Ecology. (1) One hour of seminar per week, plus one weekend field trip to Hastings Reservation. Must be taken on a satisfactory/unsatisfactory basis. Prerequisites: Consent of instructor. Formerly Ecology 243 Topics 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 the weekend at Hastings Reservation. Discussions include consideration of techniques, statistical analysis, theoretical basis, implications, and further directions related to the selected problem. (SP) Koehn

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 the Precambrian to the present. (SP) Koehn

261. Seminar in Plant Nomenclature. (1) One hour of lecture per week. Prerequisites: Consent of instructor. Formerly Botany 224 Principles, articles, recommendations of current International Code of Botanical Nomenclature; analysis of Code through application to examples, nomenclatural resources; comparison with Zoological Code.

264. Seminar in Evolutionary Biology of the Vertebrates. (1) Course may be repeated for credit. One hour of seminar per week. Must be taken on a satisfactory/unsatisfactory basis. Prerequisites: Graduate standing; consent of instructor. Formerly Zoology 260 Presentation of results of original research by students, faculty, and visitors. Staff

265. 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 Anthropology C200.

266. Mechanisms of Developmental Evolution. (3) Two hours of lecture and one hour of discussion per week. Prerequisites: Graduate standing or upper division undergraduate 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 transcriptional regulation in 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.

271. Modeling Ecological and Morphological Phenomena. (3) Three hours of lecture per week. Prerequisites: ENES 102 or consent of instructor. Modeling methods in ecology and meteorology; sta-
gree, individual conferences. Must be taken on a satisfied/unsatisfactory basis. Formerly Paleontology 602, Zoology 602, Botany 602, Physiology 602, Anatomy 602 Individual study in consultation with the major 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

Professional Courses

303. Teaching Colloquium: Graduate Student Instructor Training. (2) Two hours of seminar plus workshops per week. Must be taken on a satisfied/unsatisfactory basis. Series of workshops and seminars designed to improve the teaching and mentoring skills of graduate students and faculty participating in the training. The seminar component includes preparation of teaching portfolios, peer and mentor evaluation of teaching, and reading and discussing relevant research. Review of the literature and development of instructional strategies. Series of workshops will include preparation of teaching portfolios, peer and mentor evaluation of teaching, and reading and discussing relevant research. (F) Lindberg

304. Dissemination of Research: Your Interface with the Public. (2) Two hours of lecture/discussion per week. This course will consist of lectures and discussions about mechanisms of communicating about science to the public. We will consider how to convey the issues, processes, and findings of scientific research to a variety of audiences using different media (e.g., posters, web pages, newsletters, newspaper and magazine articles, books, television). Projects conducted by teams of students under the direct supervision of the instructors will include preparation of outreach materials (e.g., posters, newsletters, web pages).

305. Academic Survivability. (2) Two hours of seminar per week and assignments. Must be taken on a satisfied/unsatisfactory basis. Series of lectures and workshops to prepare graduate students for many aspects of academic careers, including grant proposal writing, giving talks at meetings or to academic departments, preparing job applications and having job interviews, teaching using graduate students and postdocs, reviewing manuscripts and grant proposals, service activities and time management, working at teaching college vs. research universities, alternative careers, etc.

400. Training in Stable Isotope Methods and Mass Spectrometry. (1) Three hours of lecture and laboratory training per week. Must be taken on a satisfied/unsatisfactory basis. Series of lectures and workshops to prepare graduate students for many aspects of academic careers, including grant proposal writing, giving talks at meetings or to academic departments, preparing job applications and having job interviews, teaching using graduate students and postdocs, reviewing manuscripts and grant proposals, service activities and time management, working at teaching college vs. research universities, alternative careers, etc.

401. Introduction to Scientific Diving. (3) Two hours of lecture and three hours of laboratory per week. Prerequisites: Advanced scuba certification, swim test, medical exam, and 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 systems. (F) Staff

Interdisciplinary Studies Courses

Graduate Courses

IDS 282. Tumor Biology Seminar. (1) Course may be repeated for credit. One hour of seminar per week. Must be taken on a satisfied/unsatisfactory basis. Prerequisites: Consent of instructor. Reviews and reports of current research in tumor biology. Sponsoring departments: Integrative Biology and Molecular and Cell Biology.

Interdisciplinary Studies Courses

Special Courses

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 course. 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 listed in the sponsoring departments. See individual department course listings for further information.

Lower Division Courses


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 place of technology in the social and cultural development and culture of different American groups. The technological practices and attitudes of Native Americans and of European Americans before 1700. Technological advances, engineering, transfer, and the problems of technology. Sponsoring departments: Political Science and Electrical Engineering and Computer Science.

110. Introduction to Computers. (4) Three hours of lecture and four hours of laboratory per week. Formerly 110 and 110L. An introduction to computers and digital technology and culture. The conceptual foundations and basic skills of computer programming. Structure and use of the Internet. Elements of computer technology. Sponsoring departments: Political Science and Electrical Engineering and Computer Science.

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. This interdisciplinary course will single out specific topics in aging of great current interest and present lectures on several aspects of aging, including health and frailty, disease, socioeconomic, 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

130. Seminar on Social, Political, and Ethical Issues in Health and Medicine. (2) One hour of lecture and one hour of discussion per week. Must be taken on a pass/fail basis. Emphasis on the place of technology in the experience, philosophy, and to discuss important issues that medicine and political science. Sponsoring departments: Molecular and Cell Biology, Philosophy, and Political Science. (F) Staff

Interdisciplinary Studies

(College of Letters and Science)

Field Major Office: Undergraduate and Interdisciplinary Studies
305-1 Campbell, (510) 643-8080 http://www isl.berkeley.edu/dept/isl
Director: Renate Holub, Ph.D.

Professors

Auer, Richard H., Ph.D. (Anthropology) Renate Holub, Ph.D. (ISF)
Richard E. Hudson, Ph.D. (English) Karin L. Sanders, (Scandinavian)
Paul Thomas (Political Science) Richard Walker (Geography)

Lecturers

Urs Cipolat, Ph.D. Robert Ehrlich, Ph.D. Earl Keel, Ph.D.
Rita Maran, Ph.D. Gary V. Walker (Geography)

Affiliated Faculty

Nezar Al-Sayag (Architecture and Director, Center for Middle Eastern Studies) Guy Benveniste (Education)
Marcel Castells (City and Regional Planning, Sociology) Larry Downes (School of Information Management and Systems)
Jormge Feldman (Electrical Engineering and Computer Sciences) Gillian Hart (Geography and, Director, Center for African Studies)
Beatrix Manz (Geography) Nancy Scheper-Hughes (Anthropology)
Harley Sklen (Director, Center for Latin American Studies) Richard Steinhardt (Molecular and Cell Biology)
Preven Varaya (Electrical Engineering and Computer Sciences) Richard Walker, Ph.D. (Geography)

Interdisciplinary Studies / 305

140. Technical Communication for Non-Native Speakers of English. (3) Three hours of lecture per week. Prerequisites: English 1A, or equivalent course; upper division or graduate standing. Emphasis on improving language skills and use of the rhetorical conventions of 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 of Engineering. (F,SP) Jones

170. Economics of Organization. (3) Three hours of lecture per week. Prerequisites: Economics 100 or 101; Business Administration 110 or equivalent; or consent of instructor. This course presents economics concepts 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 firms, and cooperative ventures will also be considered. Sponsoring departments: Business Administration and Economics. (SP)

Graduate Courses

270. Workshop in Institutional Analysis. (2) Course may be repeated for credit. Two hours of seminar per week. Must be taken on a satisfied/unsatisfactory basis. Prerequisites: Doctoral standing or consent of instructor. This seminar features current research of faculty, both UC Berkeley and elsewhere, and advanced students who analyze the efficacy of economic and noneconomic forms of organization. An interdisciplinary perspective—combining aspects of law, economics, and organization—is maintained. Markers, hierarchies, hybrids, and agro-industrial forms of economic organization are examined. The seminar aims to progressively build toward a new science of organization. Also listed as Economics 225. Staff

282. Tumor Biology Seminar. (1) Course may be repeated for credit. One hour of seminar per week. Must be taken on a satisfied/unsatisfactory basis. Prerequisites: Consent of instructor. Reviews and reports of current research in tumor biology. Sponsoring departments: Integrative Biology and Molecular and Cell Biology.

B prefix=language course for business majors
C prefix=cross-listed course
H prefix=honors course
R prefix=course satisfies R& requirement
AC suffix=course satisfies American cultures requirement
*Professor of the Graduate School
†Recipient of Distinguished Teaching Award
The Interdisciplinary Studies Field (ISF) Major

Note: Please go to http://ls.berkeley.edu/dept/isf/ for the most up-to-date information about the major.

The ISF major offers students the opportunity to develop an individualized research program. With the help of an ISF faculty advisor, students use courses from the social sciences, the professional schools and colleges or the humanities in order to pursue their research. Typically, students select courses from three disciplines. In addition, 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 principle of integration can be comparative, transnational, historical, geographic, or thematic.

• 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 advisor to make sure that the range and number of courses required will be available.

The field major is administered by a faculty advisory committee. Students with an opportunity to place emerging transnational values, international rights and legal institutions that increasingly govern social, cultural and geopolitical interactions in our contemporary world. Theoretical and methodological tools from the social sciences, jurisprudence, and philosophy will be applied in the analyses of these interplays. A study of rights and norms presupposes not only an understanding of the empirical evolution of rights traditions (including constitutional traditions) in a variety of global regions, but also an understanding of the theories of rights and laws that support such traditions as they are embedded in them (just war theories, liberal theories, etc.). The study of rights and norms also requires an exploration of the transformations of crucial international norms and rights due to the formation of supranational institutions and organizations in the 20th century (UN, UNESCO, GO’s, etc.). The course will provide the student an opportunity to place emerging transnational rights institutions into a historical and geopolitical framework.

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, Senior Honors Thesis. Requirements for graduation in the Honors Program: (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 advisor a detailed research proposal with a substantive bibliography. Honors candidates will also contact an additional Berkeley faculty member or an appropriate member of the ISF advisory board for purposes of reviewing 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 technological development. Such issues include the effect of mass media and the Internet on social integrity, the politics of environmental regulation, ethical implications of genetic engineering, and others. In each case, the student will explore the historical and empirical background as well as the salient moral and political debates. We will draw on philosophical, political, and popular sources, including contemporary films, to explore the ramifications of such issues in modern culture. The goal of the course is to provide the student with an interdisciplinary introduction to key areas of conflict in the next century.

61. Moral Reasoning and Human Action: The Quest for Judgment. (3) Three hours of lecture per week. This is an interdisciplinary survey course that seeks to understand how we define justice, evil, and individual responsibility in modern society. In particular, we are going to probe carefully how humans reflect on and practice the process of moral reasoning. We will focus on human behavior in extreme situations: war, life and death conflicts, genocide and mass killing, as well as competing conceptions of human freedom. The course has a distinctive dual purpose. On the one hand, 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.

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 3-4 to be graded on a letter grade. 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违纪 second year. The topics vary from department to department and semester to semester the enrollment limited to 15 sophomores.

Upper Division Courses

100A. Introduction to Social Theory and Cultural Analysis. (4) Three hours of lecture per week. Formerly 100. Introduction to classical theoretical investigations concerning the construction and organization of social life. Using some works from 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—gender, sexual, class—the development of institutions, etc.

100B. Introduction to Social Theory and Cultural Analysis. (4) Three hours of lecture per week. Introduction to classical and contemporary analyses of the development and construction of individual identity, the concepts of subjectivity and agency, and notions about the inner life. An exploration of the construction of meaning and communication through an examination of works from discourse analysis, symbolic anthropology, literary and film studies. (F,SP)

100C. Word and Image. (4) Three hours of lecture per week. This course is designed to sharpen our skills in thinking about the world in which we live and to sharpen our sensitivity to the ways in which words and images meet. Starting with works from the ‘classical’ tradition we will proceed to investigate how word/image constellations operate in a variety of media, including sculpture and poetry, painting and prose, death masks, interviews, photographs, silent movies and advertising.

110C. 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 Western ‘classical’ tradition we will proceed to investigate how word/image constellations operate in a variety of media, including sculpture and poetry, painting and prose, death masks, interviews, photographs, silent movies and advertising. Also listed as Scandinavian C114.

100D. Introduction to Technology, Society, and Culture. (4) Three hours of lecture and one hour of discussion per week. This course surveys the technological revolutions of the 19th and 20th centuries, it then focuses on the development of 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) Four hours of lecture/discussion 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 geopolitical interactions in our contemporary world. Theoretical and methodological tools from the social sciences, jurisprudence, and philosophy will be applied in the analyses of these interplays. A study of rights and norms presupposes not only an understanding of the empirical evolution of rights traditions (including constitutional traditions) in a variety of global regions, but also an understanding of the theories of rights and laws that support such traditions as they are embedded in them (just war theories, liberal theories, etc.). The study of rights and norms also requires an exploration of the transformations of crucial international norms and rights due to the formation of supranational institutions and organizations in the 20th century (UN, UNESCO, GO’s, etc.). The course will provide the student with an opportunity to place emerging transnational rights institutions into a historical and geopolitical framework.

C101. Economic Geography of the World. (4) Students will receive no credit for C101 after taking 100A or Geography 110. Three hours of lecture per week. Prerequisites: Geography 20 or prior courses in economic or geographical development strongly suggested. Industrialization, urbanization, and regional development. Locational effects of development in manufacturing, services, trade, and finance. Dynamics of technical change, labor relations, industrial organization, industrial restructuring, and the labor force and the social fabric of cities and regions. Competition and national rivalries in a global economy. Also listed as Geography C110. (F,SP) Walker

110. Special Topics in Interdisciplinary Studies. (4) Course may be repeated once for credit with different topic. Four hours of lecture per week. vis course is
designed primarily to allow faculty to develop courses which address specific issues, themes, or problems of interdisciplinary interest. Topics vary semester to semester. Students should consult the department's webpage for current offerings before the start of the semester.

C126. International Media, (3) Course may be re-peated 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 Mass Communications C160 and American Studies C160.

137AC. Across Disciplines: 20th-Century Art Foundation. 3 hours of lecture per week. This course is an introduction to and comparative exploration of century artists using examples from various art forms. Prerequisites: consent of instructor. This course may be repeated for credit as topic varies. Three hours of lecture per week. Must be taken on a passed/not passed basis. Prerequisites: Regulations set by the College of Letters and Science. Formerly Social Sciences 198 and Humanities 198. Seminars for the group study of selected topics not covered by regularly scheduled courses. Topics will vary from semester to semester.

198. Directed Group Study for Advanced Undergraduates. (1-3) Course may be repeated for credit. Individual conferences. Must be taken on a passed/not passed basis. Prerequisites: Regulations set by the College of Letters and Science. Formerly Social Sciences 198 and Humanities 199. Directed individual independent study and research of special topics by arrangement with faculty.

International and Area Studies
(Consortium of Colleges and Laboratory)
Office: 101 Stephens Hall, (510) 642-4466
http://www.ias.berkeley.edu

Program Overview
International and Area Studies attempts to enhance the educational experience at the undergraduate and graduate levels. The courses that IAS offers are interdisciplinary and internationally focused, and the program promotes the arts, social science, and political innovation that accompany the formation of multiculure Europe. This involves (1) an examination of the international concept of human and citizenship studies in the study of the multicultural world. Also listed as Geography C152, History C176, and International and Area Studies C145.

C155. 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 self-orientation will lead discussions on some of these topics. Also listed as Computer Science C195.

C160. 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. Also listed as Anthropology C160.

188. Preliminary Thesis Preparation, (2) Two hours of lecture/discussion per week. Must be taken on a passed/not passed basis. Prerequisites: Declared ISF major, for specific independent course ISF majors. Students will develop a proposal for the senior thesis, locate research sources on campus, engage in preliminary research on their thesis topic, and develop a preliminary but solid bibliography.

189. Introduction to Interdisciplinary Research Methods. Five hours of seminar per week. Prerequisites: Interdisciplinary Studies Field Majors and intended ISF majors. This course offers an introduction to interdisciplinary quantitative and qualitative research methods that students of the sciences are taught to clarify their research topics and to tailor their methodological approaches to their disciplinary inclinations. They will build a grounded bibliography on their selected topic, study the basic conceptual and theoretical arguments on their particular topic. By the end of the semester, they will have written a critical survey of the literature on their topic which will serve as the introductory chapter to the thesis. Students who write honors theses will also contact faculty on campus who have expertise in the students' research area.

190. Senior Thesis, (4) Two hours of seminar per week plus individual conferences. Prerequisites: Senior standing; completion of ISF core courses; declared in the major. This seminar is a part of the senior thesis pertaining to the student's individual area of concentration within the interdisciplinary studies field major.

H195. Honors Thesis, (4) Two hours of seminar per week plus individual conferences. Prerequisites: Senior in the honors college and completion of ISF core courses; declared in the major; 3.5 GPA overall and in the major. Entails writing a bachelor's thesis pertaining to the student's individual area of concentration within the interdisciplinary studies field major. This thesis will be read by the thesis adviser and one other faculty member.

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Minimum Requirements for the Degree, (1) A maximum of 24 units of Independent Study is defined as course work undertaken for the professional or Ph.D. degree is required, at least 12 units of which must be graduate-level work. All courses must be courses offered outside the professional school or department in which the student is concurrently registered.

(2) Demonstrated proficiency in a modern foreign language relevant to the focus of the program of study equivalent to the completion of four college- level courses, such as: AATCP 202A or 202B, Theories of Development and Political Change; 205, The Nation-Building Process; 209A or 209B, Comparative Political Economy; or 226A or 226B, International Political Economy.

Graduate Program
Advisers: Richard Abrams (History), Vinod K. Agarwala (Political Science), Nancy Anaghyar (Architecture, Max Auffhammer (Agriculture and Resource Economics), Richard Buchsbaum (Law), Margaret Chowning (History), David Cohen (Classics/Rhetoric), David Cort (Environmental Policy, Management), Jillian Hart (Geography), Chang-Tai Hsieh (Economics), Mathias Kordordt (Environmental Planning and Policy), David K. Leonard (Political Science, Food Policy, Management), Gianni Di Renzo (European and International Studies), Eric Stover (Public Health), David Vogel (Business), Bonnie Wade (Music), Michael Watts (Geography), Steve Weber (Political Science).

M.A. Degree. The M.A. Degree Program in international 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 is designed to complement other degree programs by providing the fundamentals of contemporary international issues and detailed knowledge of particular world regions or countries. Students are exposed to the contents of courses within a defined framework to suit their interests. Specific course work is chosen in consultation with a faculty adviser.

Eligibility. Any Berkeley student currently enrolled in a professional degree or Ph.D. program is eligible to apply. Students must have at least one year remaining in their current degree program and must be able to demonstrate proficiency in a modern foreign language relevant to the focus of the program of study equivalent to the completion of four semesters of college-level instruction.

Courses. Students in the M.A. program concentrate their course work in one of two ways, topical or area. Topical-oriented course work concentrates on selected aspects of current international affairs. Area-oriented course work focuses either on a major country or a major region of the world and usually has a strong historical or cultural dimension.

Each student must demonstrate a strong grounding in economics and politics. Students who have not completed equivalent course work before enrollment in the program must take two intermediate-level economics courses, such as Economics 100A-100B (Economic Analysis, Micro and Macro) and at least one graduate-level course in political science, such as Political Science 202A or 202B, Theories of Development and Political Change; 205, The Nation-Building Process; 209A or 209B, Comparative Political Economy; or 226A or 226B, International Political Economy.

How to Apply. Graduate students submit applications during the spring semester of their first year of course work at one of Berkeley's professional schools or Ph.D. programs. Students in Ph.D. programs are required to spend more than two years to complete may apply in the spring semester of their second to last year of graduate study. Please contact the department for specific application and deadline information.

Lower Division Courses
1. The Berkeley Forum on the International World, (1) Course may be repeated for credit. One or two hours of lecture per week. Prerequisites: Declared ISF major, for specific independent course passed/not passed basis. An introduction to major topics and current faculty research concerning international studies. Emphasis upon modern and contemporary society, areas and national/ regional focus or area. Eligibility. Any Berkeley student currently enrolled in a professional degree or Ph.D. program is eligible to apply. Students must have at least one year remaining in their current degree program and must be able to demonstrate proficiency in a modern foreign language relevant to the focus of the program of study equivalent to the completion of four semesters of college-level instruction.

Courses. Students in the M.A. program concentrate their course work in one of two ways, topical or area. Topical-oriented course work concentrates on selected aspects of current international affairs. Area-oriented course work focuses either on a major country or a major region of the world and usually has a strong historical or cultural dimension.

Each student must demonstrate a strong grounding in economics and politics. Students who have not completed equivalent course work before enrollment in the program must take two intermediate-level economics courses, such as Economics 100A-100B (Economic Analysis, Micro and Macro) and at least one graduate-level course in political science, such as Political Science 202A or 202B, Theories of Development and Political Change; 205, The Nation-Building Process; 209A or 209B, Comparative Political Economy; or 226A or 226B, International Political Economy.
2.0. Perspectives in International Education. (2) Three hours of lecture and one hour of discussion per week. Must be taken on a passed/not passed basis. Prerequisites: Freshman or sophomore standing. 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 economy and development. Topics will be divided into three general sections: 1) theories on political economy and development; 2) historical background on the causes and effects of politics and markets; and 3) contemporary perspectives on political economy and development. (F,SP)

102. Scope and Methods of Research in International and Area Studies. (4) Three hours of lecture and one hour of discussion per week. Formerly Polit- ical Economy 102 B. Prerequisites: Economics 1 or equivalent. Course may be repeated for credit. One to three hours of independent study per week. Must be taken on a passed/not passed basis. Prerequisites: Consent of instructor. Advanced multi- disciplinary research in current issues and topics in international and area studies. Students work in self-selected research groups with a lab instructor. The content of which is approved by faculty in charge. (F,SP)

106. Intermediate Microeconomic Theory. (4) Students will receive no credit for 106 after taking Eco- nomics 100B. Business Administration 101B. 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 inter- mediate macroeconomics focusing on economic growth and international economics. It covers a number of topics including economic growth, industrial revolution, post-industrial revolution, flexible-price and sticky-price macroeconomics, and macroeconomic policy. Course is structured for students in International Affairs and other non-economic social science majors. (F,SP) Hsieh

C118. Introductory Applied Econometrics. (4) 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 to test the hypothesis. Also includes cross-sectional and time-series data; econometric methods for the analy- sis of qualitative information; hypothesis testing. The techniques of statistical and econometric analysis are developed through applications to a set of case stud- ies and real data in the fields of environmental, re- source, and international development economics. Stu- dents learn the use of a statistical software for 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. Interdisci- plinary study of selected topics in international and area studies. Each offering focuses on problems and issues of international studies that can be accomplished in a general topic lecture course. Through the use of lectures, discussions, and multi- media presentations, students will explore a variety of perspectives on the topic 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)

145. Multicultural Europe. (4) Three hours of lec- ture per week. Formerly Interdisciplinary Field Studies 145. In this course, we will trace some of the sub- stantive changes and transformations taking place in contemporary Europe in the areas of culture, society, and politics. We will present a set of case stud- ies of migration and politics—on the national culture of the core countries and examine the ways in which particular national cultures are changing. The goal of the course is, first of all, to familiar- ize 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 nationhood and citizens- hip, and (2) a study of the Europeanization of culture. Also listed as Geography C152, History C176, and Inter- disciplinary Studies C145.

150. Advanced Studies in International and Area Studies. (3-4) Course may be repeated for credit. Three hours of lecture and one hour of discussion per week. Prerequisites: Consent of instructor. Advanced multi- disciplinary research in current issues and topics in international and area studies. Sections will focus on specific geographical areas with appropriate comparative material included. A major research project is re- quired as well as class presentations. Topics change each semester. (F,SP)

171. Internship in Agroecology and Sustainable Development. (4-6) 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 se- lected internships in government agencies or farmer networks associated with the Brazilian Con- sortium on Agroecology and Sustainable Development. The purpose of the internship is to gain direct experi- ence and an understanding of the 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 present periodic written reports. Work commitments will range between 180-360 hours depending upon 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 as- sessment by the faculty advisor. Internship is repeat- able 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) Allieri

172. Agroecology: A Brazilian Perspective. (4-5) Course may be repeated for credit. Twelve to twenty-four hours of lecture/discussion per week. Prerequisites: Junior or senior standing or consent of instructor. This course will be conducted at the Universidade de Campinas and Univer- sidade Federal de Santa Catarina. Students participate in a combination of formal lectures, directed discussions based upon assigned readings, and presenta- tions by both Brazilian and US experts. Field sites will be selected from local farms and agroec- ology centers will complement the classroom lectures and discussions. Final assessments will be based upon performance in multiple special topic assign- ments connected to the various readings. Students will participate in group discussions and presentations or- ganized around central themes. Final assessment by the faculty instructor will be based upon written per- formance, quality of presentation of material for dis- cussion, and demonstration of mastery of required reading assignments through quizzes, exams, and oral discussions. Course completion is on a passed/not passed basis and is repeatable for up to 16 units. Enrollment is re- stricted to 10 students per term selected through a special selection process. See instructor for details. (F,SP) Allieri

180. Current Issues in International and Area Stud- ies. (3) Course may be repeated for credit. Three hours of lecture/discussion per week. Section 1 to be graded on a letter-grade basis. Section 2 to be graded on a passed/not passed 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 per- spective on specific subjects with the intent of linking students to the scholarly and policy communities in understanding and explaining current international is- sues, events, and crises. The subjects will vary from semester to semester. Students may enroll in the lec- ture only for 2 units or may enroll in the lecture and dis- cussion section for 3 units. (F,SP)

197. Field Studies. (1-4) Course may be repeated for credit. Individual meetings. Must be taken on a passed/not passed basis. Prerequisites: Upper division standing and consent of instructor. Supervised expe- rience in a specific internship or project related to certain area studies in off-campus organizations. Regular in- dividual meetings with faculty sponsor and written re- ports required. (F,SP)

198. Directed Group Study. (1-4) Course may be re- peated for credit. Group meetings. Must be taken on a passed/not passed basis. Prerequisites: Consent of instructor. Directed group study. Students will work in a group under the supervision of a faculty advisor. Internship is repeat- able 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) Allieri

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. Must be taken on a passed/not passed basis. Prerequisites: Consent of instructor. Written proposal must be approved by a faculty adviser. Enrollment re- striction: apply to the International and Area Studies and Research for Undergraduates. Sections will focus on specific topics in international and area studies in off-campus organizations. Regular in- dividual meetings with faculty sponsor and written re- ports required. (F,SP)

Graduate Courses

202. Seminar in Portuguese Studies. (1) Course may be repeated for credit. One to three hours of independent study per week. Must be taken on a satisfactory/unsatisfactory basis. Portuguese immigrants have exerted a strong imprint on the landscape and culture of California and other states in which they have settled. The impact of the diaspora continues to be a lively topic of scholarly re- search. Likewise, the rapid transformations of Portugal and Portuguese society as it has emerged from the multi- headed, fragmented, and politically fractured 1974Combo environment towards the EU make for compelling research top- ics. The strong parallels between the Mediterranean climate landscapes of Portugal and California provide excellent opportunities for comparative studies in en-
vironment and human adaptations in environment. This seminar provides a forum for the presentation and discussion of ongoing research topics in Portuguese studies by Berkeley faculty and graduate students, as well as visiting scholars and fellows. (F,SP) Kondolf

C229. Mediterranean-Climate Landscapes. (1-3) One to three hours of lecture/demonstration per week. Comparative study of environmental conditions and human responses thereto in California and other Mediterranean-climate regions, with intensive treatment of biomes, soil sciences, ecology, planning, management, and/or landscape architecture, with application to California, Portugal, or other Mediterranean-climate regions. Students collect and analyze research papers, prepare classroom reports, plans, and/or designs. Also listed as Landscape Architecture C229. (F,SP) Kondolf

230. Cross-Listed Topics. (1-4) Course may be repeated for credit. Variable format. Prerequisites: Consent of instructor. This course is designed to accommodate cross-listed courses offered through other departments, when the content of the courses is applicable to the graduate program in International and Area 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 and graduate-level standing. A short course designed to provide a vehicle to allow upper-division students no longer enrolled to campus who have considerable expertise in areas of interest to International and Area Studies graduate students. Topics will vary from semester to semester. (F,SP)

250. Graduate Studies in International and Area Studies. (4) Course may be repeated for credit. Three hours of seminar and one hour of discussion per week. Prerequisites: Consent of instructor and graduate-level standing. Graduate multidisciplinary research in current issues of international and area studies. Seminars will focus on specific geographical areas with appropriate comparative material included. A major research project is required as well as class presentations. Topics change each semester. (F,SP)

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: Consent of instructor and graduate-level standing. Students work in selected international or area studies international and area studies; government agencies, or farmer networks associated with the Brazilian Consortium on Agroecology and Sustainable Development. The purpose 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 to submit reports and regular written work. Work commitments will range between 180-360 hours depending upon the number of units undertaken and the length of term. Final assessments will be based upon performance in the internship, quality of written reports and discussions. Final assessment will be based upon participation in the various courses. Students will participate in group discussions and presentations organized around central themes. Final assessment by the faculty instructor 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. Course continuation 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 the faculty sponsor and generally will be topics not covered in other existing course work. (F,SP)

298. Directed Group Study. (1-4) Course may be repeated for credit. Group meetings to be announced. Must be taken on a satisfactory/unsatisfactory basis. 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)

299. Directed Reading. (1-4) Individual weekly meetings. Must be taken on a satisfactory/unsatisfactory basis. Prerequisites: Consent of instructor and graduate-level standing. Individual conferences intended to provide directed reading 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. Prerequisites: Consent of instructor and graduate-level standing. Teaching of a topic in environmental sciences, policy, planning, management, and/or landscape architecture, with application to California, Portugal, or other Mediterranean-climate regions. Students collect and analyze research papers, prepare classroom reports, plans, and/or designs. Also listed as Landscape Architecture C229. (F,SP) Kondolf

310. Workshop on IAS for K-12 and Community College Teachers. (2) Course may be repeated for credit as topic varies. One hour of lecture and one hour of discussion per week. Prerequisites: Consent of instructor and graduate-level standing. This course is intended to provide training in teaching environmental sciences, policy, planning, management, and/or landscape architecture, with application to California, Portugal, or other Mediterranean-climate regions. Students collect and analyze research papers, prepare classroom reports, plans, and/or designs. Also listed as Landscape Architecture C229. (F,SP) Kondolf

200 units of upper division courses, 20 units of Italian Language and Literature and 5 units of Italian Studies to satisfy the major requirement.

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 course work with primary readings and discussion in English may be counted toward the total major unit requirement. Students may be taken in other departments (e.g., History of Art, History, Music) with advance permission of the undergraduate faculty adviser. No more than 12 credits earned through Education Abroad Programs may count to...
ward 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 3.5, students must have completed at least 20 upper division units in the major with a minimum grade-point average of 3.5. Candidates 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 member. 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 course work in upper division and dissertation work in Italian 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, Venice, Bologna, Trento, Rome, Siena, or Milan. The programs feature courses in several aspects of Italian language, culture, and history. The department recognizes many of these courses as satisfying requirements in the Italian Studies curriculum. Students intending to use Study Abroad courses in this way should consult the undergraduate faculty adviser before departure. Details of the programs are available from Berkeley Programs for Study Abroad, 160 Stephens Hall, (510) 642-1356, http://www.ias.berkeley.edu/bpsa.

The department also participates in the UC Berkeley Summer Abroad program in Florence. This program offers Elementary Italian 1 and 2, which can be applied to the lower division language requirements for the major and the minor, as well as a course in Italian cultural history.

Graduate Program

The Department of Italian Studies offers an integrated M.A./Ph.D. program, in which the M.A. constitutes the first phase in a trajectory leading to the Ph.D. Applications are not accepted for the M.A. degree alone. Students holding master’s degrees in Italian Studies and related fields from other institutions may be admitted directly to the second phase of the program, as described below.

First Phase: Master of Arts in Italian Studies. Requirements: Completion of between 24 and 32 units of course work, at least half of which must be in graduate seminars. The courses must include Italian Studies 205, 290A, and 290B. The exact number of units required for each student will be determined by the graduate adviser in consultation with the Graduate Committee at the time of enrollment, and will be based on a careful evaluation of the student’s prior training in the field of Italian Studies. Students are required to demonstrate advanced reading skills in one language other than Italian and English which has a scholarly relevance to the field.

In the second year of this phase, students take a comprehensive written examination based on a reading list agreed upon by the student and the department. Upon conferral of the M.A. degree, students prepare a statement outlining plans for work in the second, doctoral phase of the program and formally request permission to proceed. Detailed information is available from the department.

Second Phase: Doctor of Philosophy in Italian Studies. Requirements: Two to three years of course work, the exact number of units depending on the extent of the student’s preparation. During this phase, students develop special expertise in primary field in Italian studies, and a secondary field in another discipline or an interdisciplinary field, prepare for a qualifying examination in their areas of specialization, and develop a dissertation topic. The qualifying examination includes both written and oral parts, and is based on the student’s primary field and two special topics developed in tutorials during the year preceding the examination. Students must also demonstrate advanced reading ability in at least two languages other than Italian and 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 an 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. Beginning Italian for Graduate Students. Three hours of lecture and two hours of laboratory per week. Italian for less proficient students. The course is designed for students with little or no prior exposure to the language. Prerequisites: 1G or equivalent. Examination required. (F,SP)

2. Elementary Italian. (5) Five hours of lecture and one hour of laboratory per week. Prerequisites: 1 or 1A. Basic grammar for beginners: Part two. (F,SP)

2G. Advanced Italian for Graduate Students. Three hours of lecture per week. Must be taken on a satisfactory/unsatisfactory basis. Prerequisites: 1G or equivalent. Examination required. (F,SP)

3. Intermediate Italian. (5) Five hours of lecture per week. Prerequisites: 2. Grammar review, reading, and written composition. (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-R5B. Italy at Home and Abroad. (4/4) Three hours lecture/discussion per week. Prerequisites: Sub- ject A or equivalent for R5A; R5A or equivalent for R5B. 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 emigrants. Works studied will be primarily chosen from among fiction and non fiction narratives, both originally in English and translated into it. R5A satisfies the first half of the Reading and Composition Requirement and R5B satisfies the second half. (F,SP)

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 skills 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. 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 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)

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. Prerequisites: Priority given to freshmen and sopho- mores. 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. 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)

70. Italian Cinema: History, Directors, Genres, Intro- duction to Italian Cinema. (3) Course may be re- peated 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 Italian directors and genres and 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 the present. All students will attend weekly screenings. Films and film clips will also be shown during lectures. (F,SP) Moses

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 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 from semester to semester. Enrollment limited to 15 sopho- mores. (F,SP)

98. Directed Group Study. (1-4) Course may be re- peated 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

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310 / Italian Studies
Upper Division Courses

101A-101B. Advanced Grammar, Reading, and Conversation. Three hours of lecture per week. Prerequisites: 9A-9B. (F,SP) DiCarlo

103. History of Italian Culture. (3) Three hours of lecture per week. Formerly 103A-103B. Introduction to the history of Italian language and culture. Taught 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. (3) Three hours of lecture 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). (3) Three hours of lecture per week. Formerly 109A-109B. A close introductory reading of Dante’s Commedia. Taught in Italian. (F,SP) Ascoli, Bottinelli

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. Humanism and the Early Renaissance. (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. A close study of the literature and culture of the 16th century. Emphasis on the literature and culture of the Italian Peninsula. (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 style with literary and poetic structure studied in film theory and older history. 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 will fulfill the film major requirement in theory. (F,SP) Moses

113. Seventeenth-Century Literature and Culture. (4) Course may be repeated for credit as topic varies. Three hours of lecture per week. The main trends in the prose and poetry of the age of the Baroque. (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. Main trends in the fiction, poetry, prose and theatre of the 19th century. (F,SP) Staff

116. Twentieth-Century Literature and Culture. (4) Course may be repeated for credit as topic varies. Three hours of lecture per week. 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 lecture, readings, and discussion per week on major authors, themes, and movements in Italian literature. (F,SP) Staff

120A. Dante’s Inferno (in English). (3) Three hours of lecture per week. A close introduction to Dante’s Inferno in the context of his other works. Taught in English. (F,SP) Ascoli, Bottinelli

120B. Dante’s Purgatorio and Paradiso (in English). (3) Three hours of lecture per week. A close introduction to Dante’s Purgatorio and Paradiso. Prior completion of Italian 130A. Inferno is recommended. Taught in English. (F,SP) Ascoli, Bottinelli

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. This course will study Italian culture 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 Italian cinema as seen in the development of 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 film major requirement in one of history, genre, and auteur. (F,SP) Moses

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 style with literary and poetic structure studied in film theory and older history. 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 will fulfill the film major requirement in theory. (F,SP) Moses

198. Supervised Independent Study and Research. One hour of seminar per week. Formerly 207, 208, 211, 213. Investigation of special topics, genres, and authors in Italian literature and culture of the late 16th and 17th centuries. (F,SP) Moses

199. Directed Group Study. (1-4) 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

201. Historical Grammar. (2,4) Class participation. Three hours of lecture per week. Formerly 207, 208, 211, 213. Investigation of grammar with consent of instructor. (F,SP) Fuller

202. Historical and Contemporary Concepts of History (in English). (4) Three hours of lecture per week. A course designed to provide the student with a general view of the major developments in contemporary critical thought and an opportunity to apply critical methods to literary texts. One oral report and a final paper. (F) Stefani

203. 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) and 125: Linguistic development of the major Romance languages (French, Italian, and Spanish) from the common Latin origin. Comparative perspective, combining the study of Latin and Romance grammatical development of major Romance languages. Also listed as Spanish C202 and French C202. Staff

204. Contemporary Trends in Critical Theory. (2,4) Three hours per week. This course is designed to provide the student with a general view of the major developments in contemporary critical thought 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) Three hours of seminar and one hour of discussion per week. This course introduces the student to current approaches in Italian literary criticism. Assigned reading and oral presentations involved. (F,SP) Staff

206. 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, Bottinelli

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 212. Seminar on Dante’s Commedia and other works. (F,SP) Ascoli, Bottinelli

215. Seminar in Renaissance 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 215. Investigation of major topics, genres, and authors in Italian literature and culture of the 15th and 16th centuries. (F,SP) Ascoli, Clubb, Moses

220. Seminar in Baroque 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 218. Investigation of major topics, genres, and authors in Italian literature and culture of the late 16th and 17th centuries. (F,SP) 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 223. Investigation of major topics, genres, and authors in Italian literature and culture of the 20th century. (F,SP) Spackman, Fuller

240. Special Topics in Film and Film Theory. (4) Course may be repeated for credit as material changes. 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 and two hours of laboratory per week. Prerequisites: Open to qualified seniors in the film studies program with consent of instructor. Formerly 240. Investigation of special topics in the theory and practice of cinema, treated in relation to various trends in contemporary critical thought (film theory, psychoanalysis, ideological critique, discourse analysis, etc.). (F,SP) Moses

244. Special Topics in Genre and Mode. (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 a significant area of film and/or 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 hour 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 Ital-
ian 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 consent 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 curriculum with extramural fields of study, culminating in the writing of a research paper. Course is required for all Doctor of Philosophy candidates. (F,SP) Staff

282. Prospective Tutorial. (4) Regular meetings with professor. Prerequisites: Consent of instructor. Directed reading course leading to the production of a formal dissertation prospectus with detailed bibliography. 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. A, M.A. or Ph.D. students who elect to repeat the sequence must do so on a satisfactory/unsatisfactory basis. Two 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 research 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. Prerequisites: Consent of instructor. Directed reading course leading to the production of a 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. Sections 1-2 to be graded on a satisfactory/unsatisfactory basis for Ph.D. students. Prerequisites: Graduate standing in Italian studies. Formerly 299. Reports on current scholarly work by faculty and graduate students. (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 advisor. 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 comprehensive 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 as 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 two hours of demonstration per week. Prerequisites: Graduate student instructor status. Formerly 301. Required of all graduate student instructors in their first semester 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, applysoj@berkeley.edu, (510) 642-3383
http://www.journalism.berkeley.edu
Dean: Orville Schell, M.A.

Professors
Mark Danner, A.B. Harvard University. Foreign policy, non-fiction novels.
William Drummond, M.S. Columbia University Graduate School of Journalism. Foreign policy, reporting.
Jon Else, M.A. Stanford University. Documentary film, television, cinematography.
Thomas Leonard, Ph.D. University of California, Berkeley. Historical and social influence of the press.
Orville Schell, M.A. University of California, Berkeley.

Carolyn Wakeman, Ph.D. Washington University. China, Asian studies.

Adjunct Professors
Lowell Bergman, Investigating reporting
Paul Grabowicz, New media reporting and production.

Senior Lecturers
Joan Bider, Television and broadcast journalism.
Susan Rasky, M.A. London School of Economics. Political and urban reporting.

Program Directors
Lydia Chavez, Latin American Studies Concurrent Degree
Clay Felker, Magazine Center
Paul Grabowicz, New Media
Ken Light, Center for Photography
Marcia Parker, Business Reporting
Susan Rasky, California News Service
Tom Reitman, Investigative reporting
Carolyn Wakeman, 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 photography. 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 way to train 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 exhaustive 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 stressing different techniques, such as investigative reporting and magazine reporting. The curriculum also includes courses in copy editing and photography and a sequence of courses in television and radio reporting.

Another group of courses is intended to increase understanding of the role of journalism in society. There are courses in the history of journalism, legal aspects of the media, journalistic ethics, and the literature of journalism.

Candidates for the M.J. degree are expected to complete their work for the degree in four semesters. They must complete 36 units in approved upper division and graduate courses, of which at least 24 must be in graduate courses in journalism, and must pass an acceptable masters project. Students are encouraged to take about one-third of their courses in disciplines other than journalism.

Applicants for graduate study should hold a bachelor’s degree comparable to that given by the University of California. Requirements for admission are outlined in the brochure Graduate Application for Admission and Fellowships, available at the Office of the Dean of the Graduate Division, and in the Announcement of the Graduate School of Journalism.

The Graduate School of Journalism offers several courses for undergraduates, ranging from small writing and reporting seminars to large lecture courses.

Further information, application requirements, and copies of the Announcement of the Graduate School of Journalism are available from the Journalism Office, North Gate Hall, or go to http://journalism.berkeley.edu/admissions/request.

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. 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

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 two 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 interaction between peers and faculty, and may include 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)

96. Directed Group Study in Journalism. (1-4) Course may be repeated for credit. Hours to be arranged.
141. The Mass 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

C183. China in the 1990s: Reporting the Contradictions. (4) Students will receive no credit for Sociology C183 after taking Sociology 183. Three lecture and one hour of discussion per week. Prerequisites: 1, 3, 3AC or consent of instructor. Formerly 183. This interdisciplinary course applies sociological methods to analyze the dramatic social consequences of the economic reforms underway in China since 1978, while examining the practical problems of how the Chinese and American media represent these developments. Students will work 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 influences on news agendas. Also listed as Sociology C183. Gold, Wake-man

Field Study in Journalism. (1-2) Course may be repeated for credit. Must be taken on a passed/not passed basis. Supervised experience in the practice of journalism in off-campus organizations. Individual material will be arranged. Consent of instructor and written report required. See Additional Information, “Field Study and Internships.” (F,SP) Staff

Directed Group Study in Journalism. (1-2) Course may be repeated for credit. Seminar with three hours of lecture or discussion per week. Must be taken on a passed/not passed basis. Prerequisites: Total grade point average of not less than 3.0 and consent of instructor. Enrollments restrictions apply; see department. (F,SP) Staff

Graduate Courses

200. Reporting the News. (3) Five hours of seminar and eight hours of field work per week. This course, students are taught the fundamentals of reporting and writing news stories and of collecting information. Close individual attention is given to each reporting assignment. Students will work half term of first year. Limited to first year graduate students in Journalism. (F) Chavez, Drummond, Henry, Gorney, Gunnam, Rasky

Advanced News Reporting. (3-4) Course may be repeated for credit with consent of instructor. Three hours of seminar and eight hours of field work per week. Must be taken on a passed/not passed basis. 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. (3) 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 later 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: Permission of 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 on using search engines and sub-

212. Advanced Radio. (1-3) Course may be repeated for credit with consent of instructor. Three hours of lecture/individual study and research. Must be taken on a passed/not passed basis. Prerequisites: Radio 110 or consent of instructor. Radio students may continue to develop their news and production skills in several formats: (1) the reporting and production of the weekly news program for KALX-FM. Each episode explores a specific theme with focus on the geographic, cultural, and political entity known as Oakland; (2) the collaborative production of a document ary film; and (3) production of a development and production of independent long-form pieces for broadcast on different outlets. (F,SP) Drummond

Documentary Photography. (3) Course may be repeated for credit with consent of instructor. 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 be working on weekly assignments as well as a final project that would directly correlate with the material covered in class as well as the courses taught by Ken Light. The tutorial will encourage students to think about and experiment with photography not only their conceptual understanding of the medium, but especially their technical, shooting, and printing, knowledge of photography. 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 of lecture/individual study and research. This course will cover how to research and prepare for reporting; how to get to here and journalists there. Course will cover how to report on the politics, economics, and social issues of a foreign country. Past classes have traveled to Mexico, China, Cuba, Hungary, Ghana, Hong Kong, India, Japan, Venezuela, Ecuador, and Peru. (F,SP) Chavez, Wake-man

213. Documentary Photography. (3) 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 discussion of policies and practice in reporting political events and campaigns. (F,SP) Rasky

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 be working on weekly assignments as well as a final project that would directly correlate with the material covered in class as well as the courses taught by Ken Light. The tutorial will encourage students to think about and experiment with photography not only their conceptual understanding of the medium, but especially their technical, shooting, and printing, knowledge of photography. 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 of lecture/individual study and research. This course will cover how to research and prepare for reporting; how to get to here and journalists there. Course will cover how to report on the politics, economics, and social issues of a foreign country. Past classes have traveled to Mexico, China, Cuba, Hungary, Ghana, Hong Kong, India, Japan, Venezuela, Ecuador, and Peru. (F,SP) Chavez, Wake-man

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 on using search engines and sub-
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 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. Readings, books and critical con- cepts, Pulitzer-winning newspaper features, and magazine pieces from a variety of outlets. All assignments are intended for publication. (F,SP) Gornay, Pollan

244. 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 of the role of the media in China since 1949. 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 democratic movement of 1979 and 1989 and the subsequent ideological rethrenchment. (SP) Wakeman

249. Media and Society in China. (3) Three hours of lecture/credit per week. This seminar examines the role of the media in China since 1949. 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 democratic movement of 1979 and 1989 and the subsequent ideological rethrenchment. (SP) Wakeman

250. Investigative Reporting. (4) Course may be repeated for credit with consent of instructor. Three hours of lecture/discussion plus eight hours of field work per week. Prerequisites: 282, 283, and consent of instructor. Production of television documentary news programs. (F,SP) Else

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,SP) 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: 200 or equivalent; for others, consent of instructor. Study and analysis of techniques of writing and editing of articles for publication. (F,SP) Staff

254. Opinion Writing. (2-4) Course may be repeated for credit with consent of instructor. Two hours of seminar per week. The reporting, writing, and editing of newspaper editorials and op-ed essays. (F,SP) Flasby

255. Law and Ethics. (3) Three hours of lecture per week. Prerequisites: 283 and consent of instructor. The first eight weeks will concentrate on First Amendment and media law, including libel and slander, privacy, free press/fair trial conflicts, and litigation arising from controversy. The closing weeks will focus on ethical dilemmas faced by reporters and editors. Using case studies, readings and guest lecturers, the course examines the murky conflicts that don’t necessarily make it to court but nevertheless force difficult newsroom decision-making. (F,SP) Staff

256. Investigative Reporting for TV and Print. (2,3) Two hours of seminar per week. Students will be required to investigate leads that are received by the faculty, and prepare briefing papers for the class to introduce guest speakers. They will work on researching and reporting assignments related to documentary productions and print stories for different outlets. “Sources,” people with information critical to developing a story, need to be developed. The responsibilities of a reporter engaged in developing stories will be a constant theme of the seminar. (F,SP) Bergman, Gunison

262. Law for Legal Affairs Reporting. (3) Three hours of lecture/discussion per week plus additional outside time in the courts. Examination of the structure and philosophy of the legal system and the role of the journalist for reporting legal affairs. (F,SP) Staff

275. 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,SP) 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 insti- tutions of broadcast journalism (newspaper, magazine, radio, television). Practi- ce, techniques of reporting news for radio and television. (F) Biedner, Calo, Staff

283. Reporting for Television. (5) Six hours of lecture/discussion and twenty-four hours of laboratory/field work per week. Prerequisites: 282 and consent of instructor. Production of television documentary news programs. (F,SP) Else

285. Advanced Television Reporting: Longform Television. (4) Three hours of lecture, and fifteen hours of laboratory/field work per week. Prerequisites: 282, 283, and consent of instructor. Reporting and production of television news magazine stories and programs. (F,SP) Biedner, 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 Wiseman, Harry Hampton, Lourdes Portillo, Er- rol Morris, Martin Ritts, Barbara Kopple, Orlando Bagwell, the Maysles, and the news staff producers, we look at the practical problems of making docu- mentaries for a mass audience. (Required for J-School students who elect to consider specializing in docu- mentary). (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 fo- cus on a single documentary and take an 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 app- ropriate dramatic structure, and the public impact and critique of the program. (SP) Staff

288. Digital TV and the World. (3,4) Three hours of lecture and twelve hours of laboratory/field work per week. Prerequisites: 282, 283, and consent of instructor. Production of television documentary news programs. (F,SP) Else

293. Master's Project Seminar. (1-2) Three hours of lecture, and fifteen hours of laboratory/field work per week. Seminar for reporting legal affairs. (F,SP) Staff

294. Master's Project Seminar. (1-2) Three hours of lecture and fifteen hours of laboratory/field work per week. Seminar for reporting legal affairs. (F,SP) Staff

Landscape Architecture and Environmental Planning (College of Environmental Design)

Chair: Peter C. Bosselmann, M. Arch.
Professors
Peter C. Bosselmann, M. Arch. Urban design
Randolph T. Hester, Jr., M. Arch. Community participation, neighborhood design
Walter J. Hoo, Jr., M. Arch. M. Arch. Community design, landscape design, site planning
Linda L. Jewell, B. Arch. M. Arch. Relationship of design and construction technology

Associate Professors
Jeffrey G. mars, M. Arch. Urban planning and design

Assistant Professors
Jennifer Brooke, M. Arch. Design theory and practice, digital technology application
Judith Silgenzuber, M. Arch. Design theory and practice, digital technology application, plants design

Adjunct Professors
M. Arch. Landscape Architecture
David Meyer, B.S. Landscape Architecture

The Profession
The profession of landscape architecture plays an important role in contemporary society through design and planning. Professional practice includes design of public spaces for recreation ar- eas, schools, housing, neighborhoods, streets, and cities, planning for conservation of open space and rethinking, re-imagining, and revising—can be harder yet. Sometimes only an editor can help you gain the distance needed to view your work. No mat- ter 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. candi- dates 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 experi- ence in the practice of journalism in off-campus or- ganizations. Individual meeting with faculty sponsor and written reports 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

http://www-laep.ced.berkeley.edu/laep/index.html
natural amenities, land management and development, and assessment of the impact of projects and proposals on environmental quality and design of such projects to be environmentally compatible.

Landscape design typically involves project programming, site planning of buildings and buildings, controlling, planning and designing 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 study of ecology, conservation planning, environmental law, resource development, computer applications, recreation planning, and urban and transportation systems. The intent of all the emphases is the creation 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. UC students who earn the A.B. degree will become eligible to take the state exam which is required for obtaining 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 intensely all aspects of landscape architecture, including landscape analysis and planning, urban design, recreation, site design and development, graphics, construction, and planting design.

For more complete information, see the Announcement of the College of Environmental Design.

Graduate Program

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, emphasizing the relationship between the design and the environmental planning aspects of the field. This core group forms the foundation for extended course work in landscape design, urban land use planning, and environmental planning.

Current faculty research and professional involvement include growth impact and land use planning, human factors and design, environmental simulation, landscape visual and scenic assessment, ecological art, ecology and plant succession, simulation, landscape visual and scenic assessment, and the use of plants as design elements in the landscape.

The Ph.D. Degree in Environmental Planning

The Doctor of Philosophy program in environmental planning is offered for students who wish to pursue advanced scholarly and research work. The program emphasizes the development of theories and methods that underlie the fields of environmental planning or urban design, and the processes of planning and design as they relate to the solution of problems in the natural and urban environment. The Ph.D. degree in environmental planning is appropriate for those seeking careers in research and teaching in environmental planning or urban design and related roles in government or professional consultation.

There are no courses specifically required for the Ph.D. degree. In consultation with their faculty advisors, students formulate a course work plan best suited to their individual specializations within the field of environmental planning.

Ph.D. requirements are as follows: 32 units of upper division and graduate course work, two-year minimum academic residency, reading knowledge of a departmentally approved foreign language, successful completion of a qualifying examination, and a dissertation. Ph.D. degree is evaluated annually by the Ph.D. Committee.

Admission is granted to a small number of individuals each year. Most applicants will have completed a master's degree before entering. Students with only a bachelor's degree should apply to the M.L.A. program first or otherwise complete an applicant to the M.Arch. program and/or the two-year M.L.A. program.

For information about this program, please consult the Graduate Office, Department of Landscape Architecture and Environmental Planning, 202 Wurster Hall, or the Announcement of the College of Environmental Design.

Lower Division Courses

24. Freshman/Sophomore Seminar. (1) Course may be repeated for credit as topic varies. One hour of seminar per week for two semesters. Section 1 to be graded on a pass/fail basis. Section 2 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 and semester to semester. (F,SP) Staff

38. 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 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

Upper Division Courses

101. Fundamentals of Landscape Design. (5) Two hours of lecture and six hours of studio per week. Prerequisites: Environmental Planning or Urban Design or Environmental Planning by Departmental consent of instructor. This course 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. (F,SP) Staff

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 course examines the shaping and coordination of ideas from initial concept to complete designed 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 plantings, selection of construction materials, 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: Environmental Planning or Urban Design or Environmental Planning by Departmental consent of instructor. This course is a studio with a central focus on climate modification for energy conservation. We will research historical precedents in order to develop new garden forms and garden designs. We will also explore how past cultures integrated metaphysics into their gardens as an adjunct to microclimate and habitat design. The concepts of landscape and environmental planning, and the weaving of proportion, function, comfort, energy conservation, and enlightenment. Additionally, we will study the choreography of space and investigate how past cultures 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 six hours of field laboratory per week. Analysis 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, Environment Planning by Departmental consent of instructor. This course examines the use of plant materials as design elements in the landscape, from the urban scale to the site-specific scale, focusing on public space. By analyzing, historic, and current planting systems, students develop a comprehensive understanding of the roles and limitations of plants in various landscape design contexts. (F) Sullivan

*Professor of the Graduate School
†Recipient of Distinguished Teaching Award
contemporary, and Bay Area examples, the course ex-
amines the spatial, visual, and sensory qualities of ve-
egation, as well as the interplay with ecological func-
tions 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.
The course provides 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
students with an appreciation 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 two hours 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 drainage. (SP) Brooke

121. Design in Detail: Introduction to Landscape
Materials and Construction. (4) Three hours of lec-
ture and one hour of laboratory per week. Prerequi-
tives: 101. Architecture 100A, or consent of instructor.
This course introduces the visual and physical char-
acteristics of construction materials including, but not
limited to, stone, brick, concrete, metal, asphalt, and
wood. Additionally, lectures cover the produc-
tion 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 characterizing and specifying construction materials.
They become familiar with dimensional standards for
landscape structures, including pavements, stairs,
terracing, retaining walls, freestanding walls, fences,
decks, and small overhead structures. (SP) Jewel

130. Introduction to Landscape Architecture. (3)
Three hours of lecture per week. Survey of landscape
architecture as it has evolved as an expression of peo-
ples, time and place, including the garden, parks, and
public open spaces. Land use planning and environ-
mental protection. Discussion of design process and
planning methods, materials, and techniques of pro-
fessional practice. (SP) Brooke

132. Computer Applications in Environmental De-
sign. (4) Three hours of lecture and three and one-
half hours of laboratory per week. This course introduces
students to the use of computers in Landscape Ar-
chitecture and Environmental Design. It develops ap-
plied computing skills in Web publishing, Computer
Aides Design, Geographic Information System (GIS),
and Computer Aided Design (CAD). This course covers
principles of digital orthophotos, data collection,
building materials and the terminology typically utilized
when characterizing and specifying construction materials.
They become familiar with dimensional standards for
landscape structures, including pavements, stairs,
terracing, retaining walls, freestanding walls, fences,
decks, and small overhead structures. (SP) Jewel

136. Art of Drawing. (3) Two hours of lecture and four
hours of studio per week. This course develops freehand
drawing as an integral 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 their drawing. Various media such as ink,
colored pencils, and watercolor are explored as a
method to design innovative landscapes. A variety of
presentation techniques will be investigated for com-
municating landscape design. In addition to field
trips and exercises in sketching, painting, 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

138. Social and Psychological Factors in Open
Space Design. (3) Three hours of lecture and one
hour of discussion per week. Prerequisites: Consent of
instructor. The course reviews the history of landscape
architecture since 1850 in four realms: 1) urban open
spaces—that is, squares, plazas, parks, and recreation systems; 2) urban
and suburban design; and 3) regional and en-
vironmental planning; 4) gardens. The course will re-
view 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, envi-
ronmental concerns, horticultural practices, and tech-
ological innovations of American landscapes. Stu-
dents will complete a midterm, final, and a research
paper. (SP) Mozingo

139. Drawing Workshop II. (2) Two hours of lecture
and two hours of laboratory per week. Prerequisites:
Environmental Design 11A-11B or consent of in-
structor. Continued study of studio techniques, as well as ex-
ercises in projection drawings and sectional strategies.
Expressionistic modes of graphic communication will
augment measured drawing procedures (color, col-
age, figuration, layering, etc.). (SP) Hood

141AC. The American Landscape: Multicultural Dif-
fERENCE and Diversity. (3) Three hours of lecture and one
hour of discussion per week. This course will com-
pare and contrast the natural history of African American,
American Indian, and European American relationships
with the American Landscape. Traditional pat-
terns of landscape use will be explored, and the poten-
tial impact of the student on the rapidly expanding field of Geo-
graphic 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, inte-
grated, interpreted, and manipulated. It emphasizes a
conceptual appreciation of GIS and offers an oppor-
tunity to apply some of those concepts to contempo-
rary geographical and planning issues. Also listed as
Geography C168. (F) Radke

197. Field Study in Landscape Architecture. (2-3)
Three hours of lecture, one hour of discussion, and two
hours of laboratory per week. Prerequisite: Consent of
instructor. Study of a specific site that may be within
one's immediate environment or may be in another
passage. Prerequisites: Upper division standing.
Consent of instructor and sponsor. See depart-
mental information sheet for limitations. Supervised
experience relative to specific aspects of landscape ar-
chitecture. Regular individual meetings with faculty and
outside sponsor. 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. Prerequisites: Consent of in-
structor. Enrollment restrictions apply. (F,SP) Staff

201. Ecological Factors in Urban Landscape De-
sign. (3) Three hours of lecture and five hours of stu-
dio per week. Prerequisites: 134A-134B or consent of
instructor. Through lectures, studio projects, research
projects, and discussion, this course will explore the
cultural, social and physical context of ecological factors
in urban contexts. The course focuses on the inter-
action of landscape science (hydrology, geology, etc.)
with the needs of the human en-
vironment (urban design, transportation, economics,
etc.). Lectures and research projects will particularly emphasize innovative and forward thinking solutions to the ecological problems of the human environment. Throughout the semester, reading and discussions session will focus on the connections between the broader concerns of the global ecological crisis and landscape design and planning. (F) Brooke

202. Design of Landscape Sites. (4) Two hours of lecture and six hours of studio per week. Prerequisites: 201 or consent of instructor. A site design studio studying the social, historic and environmental conditions of sites in order to identify and rank the major landscape resources and constraints of sites. Emphasis will focus on the design process, the use of design standards and design criteria, and the design process of design standards and design criteria, and the design process of landscape planning. (SP) Hoad

203. Shaping the Public Realm. (4) Two hours of lecture and six hours of studio per week. Prerequisites: 201 or consent of instructor. Special topics in the design and planning of the landscape. The focus of the studio will be on a semester long project. Possible topics include community design, community planning, design as art, park design, or land services for the community. (SP) Southworth

204. Advanced Project Design. (4) Two hours of lecture and six hours of studio per week. Prerequisites: 201 or consent of instructor. Special topics in the design and planning of the landscape. The focus of the studio will be on a semester long project. Possible topics include community design, community planning, design as art, park design, or land services for the community. (SP) Southworth

205. Environmental Planning Studio. (4) Six hours of studio and two hours of lecture per week. Prerequisites: 201 or consent of instructor. Application of environmental planning principles to a complex problem involving a variety of environmental criteria and desired land uses, considering local institutional and political settings. Student teams will identify needed data, assess environmental developmental problems, weigh competing uses, and prepare an environmental management plan. (F,SP) Staff

206. Final Project Preparation Studio: Thesis and Reports. (4) Eight hours of meetings per week, including one hour of lecture and three hours of studio. Prerequisites: 252 and graduate standing. This is a special topics course to work on final project reports (thesis and professional reports). The studio, including lectures by the instructor, is meant to train and assist students in thesis or professional project research and 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, three hours of lab, or 227, or Civil Engineering 113, or Environmental Science, Policy, and Management 115B, or consent of instructor. Interdisciplinary course taught in conjunction with departments of Biological Sciences, Landscape Architecture and Environmental Planning, and Civil Engineering. Students who intend to carry out research on damaged ecosystems, supervise actual restorations or enhancement, and also students who are interested in carrying out a field or lab research project in this area are included. (SP) Kondolf

220. Environmental Geology for Planners. (4) Three hours of lecture and three hours of laboratory per week, plus two weekend field trips. Prerequisites: Geology 1 or Earth and Planetary Sciences 50, or equivalents, or consent of instructor. Review of geo- logic principles followed by analysis of seismic hazards, landslides, earthquakes, soil erosion, and use of geologic information in planning. Recognition of geologic hazards in the field and on aerial photography is emphasized in laboratories and field trips. Critical reading of technical reports and improvement of writing skills. Offered alternate years. (F) Kondolf

221. 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 applicability of environmental assessment, analysis, and evaluation in environmental planning. Topics to include geographical information systems and data bases, remote sensing, and multimedia and computer 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 ecol- ogist with insight sufficient to coordinate with technical specialists in the field of hydrology. In addition, relevant regulations and policies are reviewed. (SP) Kondolf

224. Vegetation Analysis and Management. (3) Two hours of lecture and four hours of laboratory per week. The analysis of vegetation procedures for land- scape design and environmental planning. Management of vegetation in parks, nature reserves, and open space areas. Offered alternate years. (SP) McBride

225. Urban Forest Planning and Management. (3) Three hours of lecture per week plus two one-day field trips. Introduction to the heading of urban forests, its his- tory, and its role in contemporary towns and cities. Emphasis on planning and management of the urban forest, restoration of old parks, streets trees, and urban community participation. Offered alternate years. (SP) McBride

226. Landscape Design Construction. (2) Three hours of seminar per week. Prerequisites: 121 may be taken concurrently. The course investigates the process of developing schematic landscape design pro- posals into constructed landscapes. Emphasis will be placed on understanding the durability of materials and design details, the efficient use of materials, and the ability to evaluate the value of design procedures. Emphasis can impact the environment. Field trips to construction sites, 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 coursework). Environmental Science, Policy, and Management 115A, or Geology 117 with consent of instructor. This course reviews the underlying goals and assumptions of river and stream restoration projects, reviews techniques employed in these efforts, and emphasizes strategies for evaluation of project success. The course focuses on geomorphic and hydrologic analyses relevant to restoration and en- hancement of the capability of restored freshwater ecosystems. Format: lectures by instructor, guest lectures, presentation of student independent projects, and field trips. Course requirement: independent term project in- volving original research. (SP) Jewell

228. Research in Environmental River Planning. (4) Three hours of seminar per week. Prerequisites: Open to all graduate students interested in the field of river restoration. Graduate standing is required of all students of proposals, progress reports, and final results of their independent research projects, and (2) re- views of recently published research papers in the field. Students will focus on the preparation of a literature search for all papers relevant to environmental river planning, management and restoration, and report on the papers to the seminar, including the presentation of their research projects, and (2) presentation design. Exercises and projects. (SP) Bosselmann

C225. Mediterranean-Climate Landscapes. (1-3) One to three hours of lecture/seminar/studio per week. Course will focus on the development of a broad understanding of the human responses thereto in California and other Mediterranean-climate regions, with intensive treatment of a topic in environmental sciences, policy, plan- ning, management, and/or landscape architecture. Offered with application to California, Portugal, or other Mediter- ranean-climate regions. Students collect and analyze relevant data, synthesize, and complete technical re-ports, and present their findings. Students will also present a poster to be displayed in the Center for Environment and Area Studies C229. (F,SP) Kondolf

C231. Environmental Planning and Regulation. (3) Three hours of lecture per week. This course will ex-amine emerging trends in environmental planning and policy and the basic regulatory framework for envi- ronmental management, with a focus on the develop- ment and implementation of specific legislative and policy initiatives. Offered every third year. (SP) Hester

C235. Environmental Simulation and Public Com- munication. (2-4) Two hours of lecture and six hours of laboratory per week. Introduction to the field of ex- perimental simulation; criteria for a good presentation; case studies in the use of models and media in citizen participation and environmental design; instruction in modeling, slide photography, and use of the environmental simulation in film-making, script writ- ing, and presentation design. Exercises and projects. (SP) Bosselmann

236. Advanced Seminar in Land Use and Envi- ronmental Planning. (3) Course may be repeated for credit. Three hours of seminar per week. An advanced investigation of current problems in land use and environ- mental management, with a focus on the develop- ment and implementation of specific legislative and policy initiatives. Offered every third year. (SP) Staff

C237. The Process of Environmental Planning. (3) Students will receive no credit for C237 after taking Landscape Architecture 237. Offered in even fall and spring semesters. (SP) Staff

240. Social, Cultural, and Psychological Factors in Design. (3) Three hours of lecture per week. Prereq- uisite: Consent of instructor. Survey course to introduce design- ers to the basic approaches, concepts, and research findings in the field of human/environment relations. Lectures will focus on the methods of investigation used in the design process and how to evaluate environ- ments from a user’s perspective. Guest lectures will in- troduce students to a range of faculty and design prac- titioners who deal with sociocultural issues as they
pertain to the design, perception, and use of the physical environment. (F) Staff

241. Research Methods in Environmental Design. (4) Three hours of lecture/seminar and two hours of laboratory per week. Formerly Interdepartmental Studies 241. The components, structure, and meaning of the urban environment in terms of past, present, and future conditions. An introduction to the concepts and terminologies of research, with emphasis on current trends and issues in landscape architecture and environmental planning. Topics will be announced at the beginning of each semester. (F.SP) 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 research, discussions with faculty researchers and environmental planning practitioners, and examination of topical issues in environmental planning. Topics will be announced at the beginning of each semester. (F.SP) 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. Designed to be a forum for presentation of doctoral research, discussions with faculty researchers and environmental planning practitioners, and examination of topical issues in environmental planning. Topics will be announced at the beginning of each semester. (F.SP) Staff

265. 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. Formerly Interdepartmental Studies 223. An examination of the roles of the citizens and citizen organizations in the city planning process. Models for citizen involvement ranging from 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

257. Special Topics in Design. (1-3) Course may be repeated for credit. Hours to be arranged. Three to three and one-half hours of lecture/seminar per week. The focus will be on debate and discussion of current research, planning practice, and planning policy. Readings and requirements vary year-to-year based on the topic and instructor. (F.SP) 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. Emphasis will be on the institutional approach to planning and design. The content of the magazine articles will be reviewed and current trends and issues in contemporary park design and planning will be discussed. Offered in odd-numbered years. (SP) Staff

271. The Literature of the Landscape Architecture Profession. (2) Two hours of seminar per week. Investigation of ideas in landscape architecture through the study of Landscape Architecture, the discipline’s primary American professional magazine. Beginning with the premier 1911 issue, five to ten year blocks of time will be studied to identify major values, theories and methods covered by the magazine in each given period. The content of the magazine articles will be re-examined in light of contemporary landscape architecture, planning, and theoretical trends. The intent is to trace and understand the evolving focus of the landscape architecture profession and how it has responded to broader cultural movements. Topics covered include: philosophical de-terminism, artistic movements, social values, preservation/conservation issues and the role of the professional in public life. (F) Jewell

295. Supervised Research in Landscape Architecture and Environmental Planning. (2) Any combination of 295 or 297 may be taken for a total of six units maximum toward the M.L.A degree. Hours to be arranged. Must be taken on a satisfactory/unsatisfactory basis. Prerequisites: Graduate standing and appointment as a research assistant. Supervised experience on a research project in landscape architecture and/or environmental planning. Regular meetings with faculty sponsor required. See departmental sheet for other limitations. (F.SP) Staff

296. Directed Dissertation Research. (1-8) Course may be repeated for credit. Hours to be arranged. Must be taken on a satisfactory/unsatisfactory basis. Prerequisites: Advancement to Ph.D. candidacy. Open to qualified students by permission to candidacy for the Ph.D. degree and are directly engaged upon the doctoral dissertation. (F.SP) Staff

297. Supervised Field Study. (2-3) Any combination of 295 or 297 may be taken for a total of six units maximum toward the M.L.A degree. Hours to be arranged. Must be taken on a satisfactory/unsatisfactory basis. Prerequisites: Graduate standing and consent of instructor and sponsor. Supervised experience relevant to specific aspects of practice in landscape architecture and/or environmental planning. Regular meetings with faculty and outside sponsor as well as final report required. See departmental information sheet for other limitations. (F.SP) Staff

298. Group Study. (1-4) Course may be repeated for credit. Hours to be arranged. Special group studies. Topics to be announced at the beginning of each semester. (F.SP) Staff

299. Individual Research. (1-6) Course may be repeated for credit. Hours to be arranged. Prerequisites: Graduate standing and consent of instructor. Research work conducted preparatory to completion of the thesis or professional project as well as other approved research. A maximum of six units will be counted toward the M.L.A degree. The six units allows for four units maximum for thesis or professional project research, and two units maximum for other approved research. See departmental information sheet for other limitations. (F.SP) Staff

601. Individual Study for Master’s Students. (1-8) Course does not satisfy unit or residence requirements for master’s degree. Hours to be arranged. Must be taken on a satisfactory/unsatisfactory basis. Prerequisites: Graduation and approval. 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: For candidates for the Ph.D. (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. Hours to be arranged. Must be taken on a satisfactory/unsatisfactory basis. Prerequisites: For candidates for the Ph.D. (F.SP) Staff

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 standing and approval of the doctoral committee. This course presents general pedagogical principles and methods 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 constructive feedback, teaching in the studio environment, engaging students through field exercises, grading, and composing effective tests. (F.SP) Staff

208. Interdepartmental Studies. (2) Formerly Interdepartmental Studies. Departmental faculty, two or three by graduating students. Topics may include aesthetics, ecological development, 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

252A. Thesis and Professional Project Proposal Seminar. (2) Two hours of lecture/discussion per week. May be repeated for credit. Hours to be arranged. Two hours of seminar per week. In preparation for a research or design thesis or professional project, 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

252. Thesis and Professional Project Proposal Seminar. (2) Two hours of session per week. Prerequisites: 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. (SP) Staff

253. Landscape Architecture and Environmental Planning 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. Invited lectures on current research, planning practice, and design problems. Out of approximately 14 presentations per term, typically two or three would be by department faculty, two or three by graduating students, the remainder by outside speakers. (F.SP) Staff

254. Topics in Landscape Architecture and Environmental Planning. (1-3) Course may be repeated for credit. Hours to be arranged. One to three hours 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

318 / Landscape Architecture and Environmental Planning
Latin American Studies
(Changed from College of Letters and Science)

Group Major Office: International and Area Studies, 101 Stephens Hall, (510) 642-4466 http://www.ias.berkeley.edu

Faculty Advisers
Miguel Alleyén (Environmental Science, Policy, and Management)
Stanley Brandes (Anthropology)
Stephanie Cram (Environmental Science, Policy, and Management)
Manuel Castells (Sociology/Urbanization)
Margaret Chowning (Gender Studies)
Rafael Chirinos (Environmental Science)
Alan de Janvry (Agricultural and Resource Economics)
Laura Ensminger (Sociology)
Peter Evans (Sociology)
Sylvia Guendelman (Public Health)
Michael Johnston (Geography)
Michel Laguerre (African American Studies)
Beatriz Manz (Chicano Studies/Geography)
Françoise Maseloff (Spanish and Portuguese/Comparative Literature)
Reinaldo Ochoa (Energy and Resources)
Julio Ramos (Spanish and Portuguese)
Alex Sargsyan (Eurasian Studies)
Nancy Schepner-Hughes (Anthropology)
Harley Shaiken (Education)
Candace Slater (Spanish and Portuguese)

The Program in Latin American Studies is designed to provide a balanced multidisciplinary curriculum in the history, culture, and society of Latin America for students wishing a broader perspective of the area than is usually available through a departmental major. The program may be of particular interest to students planning to enter business, government, or international agency service; students preparing to teach social science or language; or students preparing for graduate and professional schools.

From a rich variety of offerings within and across departments, there is a wide range of possibilities to suit the interests of students while completing an appropriately designed course of study. Students are advised to consult department courses in a systematic way by an interdepartmental committee of faculty members. Spanish and Portuguese are required for the major. Students must gain an intermediate level of proficiency in one language and an elementary knowledge of the other. In addition, students pursue a multidisciplinary course of study that includes the history and literature of the region. In the procedural aspects of organizing an under-graduate plan of study, students in the program are aided by participating faculty members from several departments and programs, the faculty coordinator of the group major, and student affairs officers in the International and Area Studies Teaching Program Office, and teaching associates working in the program.

The Major

Declaring a major in Latin American studies follows guidelines established by the College of Letters and Science. Students wishing to declare Latin American studies:

1. must have completed LAS 10, which is offered fall semester only;
2. must not be in their final semester of undergraduate work.

Students are reminded that: 1) no course work 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. However, other minor programs 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 satisfy major requirements.

Study Abroad: The use of course work 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 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 of LAS. Courses used to fulfill foreign language and lower division prerequisites are not included in this restriction, but must be approved by an adviser.

Honors Program: In order to graduate with honors in the major, a student must complete the year-long honors sequence, which consists of a methods course (IAS 102 or 118), followed by a thesis seminar (H195). In addition, the student must obtain a grade of 3.5 or greater in the major and 3.5 in overall University course work. The student is required to write a 75-100 page thesis on research performed in Latin American Studies. IAS H195 and H295 are designated H courses, which means that they are a member of the Latin American Studies faculty.

Course Plan

The considerable flexibility within the Latin American studies curriculum encourages students to construct a program appropriate to their specific intellectual and geographic interests. The overarching structure of the major, however, prescribes that each three-tiered program consist of the following sequences or the equivalent:

I. Latin American Literature and Culture (two courses): For students whose primary language is Spanish, the student must take one course on the colonial period (pre-1800) and one course on 19th-20th century literature. Both courses must be taught in Spanish. Colonial period choices are Spanish 104A and 107; 135 or the equivalent are Spanish 104B and 135; 135 or the equivalent. Both classes must be taught in Spanish. Honor students may choose one additional course from these literature classes, such as Portuguese 107, 135, or the equivalent. Both classes must be taught in Portuguese. See the chair or a faculty 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.

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, the student must have completed LAS 10, which is offered fall semester only; or 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.

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.

Lower Division

Required Courses: There are two required lower division courses: LAS 10 and either History 8A or 8B. LAS 10 (offered fall semester only) is critical since it provides the essential background for upper division work. History 8A (colonial period; offered fall only) or History 8B (national period; offered spring only) provides 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) which serves as the primary language equivalent to four college-level semesters of instruction and an elementary level of competence in a secondary language equivalent to two college-level semesters of instruction. Course work may consist of any combination of high school, college program, or college-level study abroad program. This requirement may be satisfied by a proficiency examination, an appropriate course work with a grade of “C” or better. Please consult with a faculty adviser or with the Teaching Program Office for current acceptable equivalencies or course work.

Primary language requirement: Completion of one of the following sequences or the equivalent: Spanish 1, 2, 3, 4 or Portuguese 101A, 101B, 102, and 103.

Secondary language requirement: If the primary language is Spanish, the student also is required to obtain an elementary level in Portuguese. If the primary language is Portuguese, the student must obtain an elementary level of proficiency in Spanish. The secondary language requirement may be fulfilled by the following sequences or the equivalent: Portuguese 101A and 101B or Spanish 1 and 2.

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, the student must have completed LAS 10, which is offered fall semester only; or 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.

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.

Upper Division Elective Courses (Five Courses)

I. Methods (one course). The methodology requirement is designed to give each LAS major a set of analytical skills appropriate to the disciplinary and core focus of their individual program. The methodology course can be drawn from any of two broad categories—either statistical methods or research design. The selection of the most appropriate class for each student should be undertaken in close consultation with an adviser. The second 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 the second category 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.

II. Four Additional Courses. Students choose their remaining four courses from an approved list available from the Teaching Program Office. At least 50 percent of each course taken in the major 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 a geo-
the M.A.

follows the same procedures as are required for
tional academic careers. Admission to the program
defined interdisciplinary interests that do not fit
dependence. Students in this program have well-
American Studies is intended for advanced stu-
other language.

a basic reading and speaking knowledge of the
level of proficiency in Spanish or Portuguese and
must include at least one methodology course ap-
propriate to the student’s course of study, and should
be either undergraduate (upper division) or graduate level,
must include at least one methodology course ap-
propriate to the student’s course of study, and should
be either undergraduate (upper division) or graduate level,
must include at least one methodology course ap-
propriate to the student’s course of study, and should
be either undergraduate (upper division) or graduate level,
include at least two courses or 8 units (three courses or
12 units for Plan II) at the graduate level. Credit earned for writing the master’s thesis may not be
included). In addition, students are required to take
Latin American Studies 200 their first year. The re-
maining coursework will be at either undergraduate (upper division) or graduate level, and would include at least one methodology course ap-
propriate to the student’s course of study, and should
be either undergraduate (upper division) or graduate level,
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The School of Law (Boalt Hall) offers a broad three-year curriculum leading to the Juris Doctor (J.D.) degree. Boalt Hall educates men and women not only for the practice of law but also for all of the varied roles lawyers perform in modern society. The law school provides an intellectually challenging course of study that imparts the theoretical and practical skills necessary for effective, creative, and responsible legal counseling and advocacy. To this end, Boalt’s curriculum is continually evolving. It currently offers an integrated curriculum presenting knowledge and skills in Business, Law and Economics; Environmental Law; Comparative Legal Studies; International Legal Studies; Law and Technology; and Social Justice.

The school also offers minors, majors for for-ml-educated attorneys, that lead to the degree of Master of Laws (M.L.L.) or the degree of Doctor of the Science of Law (J.S.D.).
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.

Torts. This course covers the law of civil injuries, including both intended and unintended interference with personal and property interests, as well as liability without fault.

Written and Oral Advocacy. Members of the class participate in Written and Oral Advocacy in the spring, after completion of Legal Research and Writing during the fall semester.

Upper Division Curriculum
The flexible second- and third-year curriculum offers a variety of legal topics and course styles, including seminars, individual and group research projects, clinical work, and judicial externships. The only required courses are Constitutional Law and Legal Profession. Topical courses are offered each semester. Students may focus intensive study on substantive areas of interest, tailoring their expertise through these special curricular programs: business, law, and economics; comparative legal studies; environmental law; international legal studies; law and technology; and social justice.

Upper Division Courses
A sample of commonly offered courses is listed below. In addition, topical courses may also be offered each semester. Course descriptions, content and requirements are subject to change; not all courses are offered each academic year. For current year course listings, visit the Boalt web site at http://www.law.berkeley.edu.

Administrative Law. This basic course concentrates on the fundamental legal principles governing federal administrative agencies, including legislative, executive and judicial control of administrative action; the exercise of administrative power; and structures of agency decision making.

Advanced Comparative Law Seminar. This seminar is designed to acquaint the student with the basic institutions and policies in legal systems adhering to continental European legal traditions (so-called civil law countries), with emphasis on judicial organization, the exercise of administrative power; and structures of agency decision making.

Advanced Comparative Law Seminar. This seminar is designed to acquaint the student with the basic institutions and policies in legal systems adhering to continental European legal traditions (so-called civil law countries), with emphasis on judicial organization, the exercise of administrative power; and structures of agency decision making.

Advanced Criminal Procedure. This course looks at the administration of justice: how it works and whether or not it is fair. Does it have independent significance and what is its meaning? Who are the players, and are they competent, resolute and compassionate? Or are they political hacks motivated by self-aggrandizement and media ink? Students focus on the legally challenging, constitutionally mandated requirements of the criminal justice system, analyzing its effect on our lives by focusing on current high-profile cases.

Advanced Legal Research. This course provides an overview of legal research that makes the transition from law school to law practice easier and more productive. Students explore the history of legal materials and examine the use of various legal research tools, including all types of research books and systems, from the earliest nominative reporters to the earliest nominative reporte
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-state.

Cities, Stratification and Separation Seminar. This course examines the new American metropolis and maps its social, political and economic geography. Students look at how official practices can make urban areas fluid sites of opportunity and change, or entrench difference and division. This class explores how these practices are depicted, how they currently operate, and what the future likely holds for city dwellers in California and the nation.

Civil Justice Reform Seminar. This course focuses initially on several important proposals for civil justice reform, such as an increase in non-lawyer practice; the appointment of special masters; and changes in the rules governing expert scientific testimony. Students examine the legal and political questions raised as well as the pros and cons of such reforms might be enacted. Students look at the relative competence and success 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) with respect to parties, venue, transfer of venue, and forum non conveniens. 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 Community Law Center (EBCLC). The East Bay Community Law Center (EBCLC) offers students an opportunity to work in a clinical setting providing free legal services in the areas of family law, civil rights, landlord/tenant law, and immigration law. The EBCLC focuses on housing law, public benefits, community economic development, and legal services for people with AIDS. Students receive training in the substantive law of each area, under the supervision of staff attorneys, handle their own client caseload.

Comparative Constitutional Law. This research seminar is for students wishing to write an extended paper on one aspect of constitutional law outside the United States.

Comparative Law. This basic course on comparative law is an introduction to the method and concept of comparative law and to the study of different legal systems, in particular the system of civil law (Europe and Latin America). Topics include the legal profession, the judicial system, procedure, contracts, and the role of foreign law in the American legal system.

Comparative Legal History. An introduction to the development of Western legal systems and a foundation for more advanced courses in legal history and comparative law. Topics include concepts of law and legislation; legal pluralism (Roman law, canon law, customary law) and legal culture; and justice and procedure.

Comparative Tort Law. This course covers the tort law of two common-law countries, England and the United States, and two civil-law countries, France and Germany. It examines what the law of torts means on cases; in civil-law systems, it is said to be based on codes. The common law grew out of the practice of English courts; the civil law grew out of the law of ancient Rome, which was rediscovered in the Middle Ages and spread throughout continental Europe. In this context, the course explores the extent that the tort law of the countries under consideration reflects these differences and the differences in dealing with the same underlying problems. In addition students look at how different legal systems have successfully dealt with these problems.

Complex Civil Litigation. This course provides a window into cutting-edge issues and exposure to practical challenges presented in dealing with complex civil litigation. The major issues addressed in class include jury persuasion, the use of jury consultants, class action issues, and the use and misuse of experts.

Computer Law. This course studies the law relating to computer software. The primary focus is on three areas of law: intellectual property, contracts and licensing, and anti-trust. Intellectual 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 relating 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: Basic Issues. This course provides an introduction to judicial review. Students also study individual rights, focusing on equal protection and due process.

Constitutional Law: First Amendment. This course covers freedom of the press, speech, assembly and religion, combining coverage of the major issues with in-depth analysis, thus enabling the class to deal with new problems as they arise.

Constitutional Law: Structural Issues. This course explores constitutional law at a deeper level. Students examine the structure of the Constitution and how that structure affects the law and judicial review.

Constructing the Corporate Deal. The class explores how corporate mergers, acquisitions, sales and business combinations are conceived, structured, negotiated and documented. Students use documents from recent transactions to evaluate and analyze the rise and fall of the in-depth analysis, thus enabling the class to deal with new problems as they arise.

Construction Law. This course covers such issues as the relationships between parties involved in the design and construction process; the role of architects and engineers; the role of the owner; and the role of the general contractor.

Copyright. This is an in-depth course in copyright, covering legal protection of works of literature, art, architecture, computer software, industrial design and other forms of authorship, mainly under the federal Copyright Act of 1976. The focus is on an examination of cases that have arisen from the inception to the closing of a deal. The focus is on the competing interests of buyers and sellers and how counsel for each side addresses those interests.

Constitutional Law. This course covers such issues as the relationships between parties involved in the design and construction process; the role of architects and engineers; the role of the owner; and the role of the general contractor.

Corporate Finance and Bankruptcy Reorganization. This course has two main purposes: (1) to introduce students to 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 structure of corporate financing transactions outside bankruptcy.

Corporations I. This course is an introduction to basic legal principles governing the relationships among corporate officers, directors, shareholders, investors, managers, creditors and workers in the business enterprise. The course focuses primarily on state general corporation law, but gives some attention to partnership, securities and employment issues.

Corporations II. This course explores the relationships among the participants of a corporate venture, with particular attention to the fiduciary principles governing those relationships in a detailed, transaction-specific context. Litigation concerning the corporation, particularly but not exclusively, with derivative suits, is also covered.

Courts and the Image of Justice in Cinema. This seminar examines the social perception of justice and its cultural function, as both a value and a legal institution, as depicted in trials and judgments in films. The films discussed, from various countries and historical periods, provide elements for a comparative study of judicial systems.

Courts and Social Policy. This seminar explores the politics of rights. Students examine classical views on the structure and limits of state intervention on com- parative and historical material that locate courts in a larger social context. Several specific sets of issues with which courts have been heavily involved are examined, including policing, welfare, school segregation, em- ployment discrimination, comparable pay and school finance.

Crime and Social Theory. This seminar examines major socio-legal work on crime and social control. It focuses on selected policy issues—increased reliance on community supervision, stricter sentences, and crime policies as they affect youth, women and minorities. These issues are explored in light of various approaches and theories of social control and crime policy.

Criminal Procedure. This course focuses on basic issues of criminal procedure through case analysis, lecture and discussion of the implications of criminal procedure for police officers and citizens/suspects. Topics include constitutional restrictions on search and seizure, police interrogation, the right to counsel, discovery, sentencing and capital punishment.

Critical Race Theory. This seminar allows students to explore at an advanced level some of the central debates in critical race theory on such issues as the intersection of racism; the intersection of race, gender and law; and the relationship between race, gender and law.

Critical View of the Legal Profession. This class explores the law and ethics of lawyering by focusing on attributes of the attorney-client relationship (e.g., confidentiality, loyalty, etc.), and then examining roles and social institutions that shape lawyers' conduct.

Cyberlaw. The emergence of global digital networks and digital technologies has brought 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 cybercrime in such areas as access, privacy, e-commerce and digital rights.

Criminal Law. This class explores the relationships among the participants of a corporate venture, with particular attention to the fiduciary principles governing those relationships in a detailed, transaction-specific context. Litigation concerning the corporation, particularly but not exclusively, with derivative suits, is also covered.

Death Penalty Clinic. Students in the Death Penalty Clinic assist death row inmates and their families before counsel. Under the close supervision of the clinic's faculty, students are involved in every aspect of post-conviction work, including visiting clients on death row, interviewing witnesses, examining evidence, researching legal issues, and writing motions and briefs. The accompanying seminar provides a theoretical foundation for the students' work. Topics include substantive capital punishment law, habeas corpus prac-
tice and procedure; and the fundamentals of death penalty litigation, including fact investigation, interview techniques and the development of mitigation evidence.

Death Penalty Seminar. This course, which offers an overview of the complex law governing the death penalty, training and preparation to help students better understand and engage in the debate. The class investigates the arguments for and against the death penalty, the history of capital punishment, the early legal challenges to the penalty, and the requirements for a constitutional death penalty scheme. In addition it considers such topics as the execution of offenders who are felony murder accomplices, mentally retarded offenders, or possibly innocent defendants, as well as the effect of race on capital sentencing. After examining the basic elements of capital sentencing schemes, the class will look more closely at litigation in a capital case. This course also discusses state court and federal habeas corpus review of death judgments and the legal issues surrounding an execution, and reconsiders the death penalty in light of recent international and domestic developments.

Disability Rights. This course teaches disability rights, an emerging area of civil rights law, exploring the substantive areas of employment, housing, education and access rights. Students will learn practical skills for litigating these civil rights cases.

Domestic Violence Clinic. Students work in one of several clinics serving the San Francisco Bay Area, or with the instructor on state legislation. They may also assist with post-conviction issues faced by battered women in state prisons and employment issues affecting victims of domestic violence. Students interview clients; draft restraining orders, memoranda, op-ed pieces and motions; represent clients at hearings; research policy issues; and attend meetings with government officials, judges and legislators.

Domestic Violence Law Seminar. This course uses 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 explored.

Drafting Legal Documents for Small Business. Through this course students learn and apply a range of law and business knowledge related to the development of small businesses, particularly in the context of drafting key documents for business organizations.

Education and the Law. In recent years the aspira- tions of U.S. educational policy (toward elementary and secondary schools) have been an uneasy mix of equity, excellence and choice. This seminar looks at the ideas behind these aspirations and the way these themes have influenced life for schoolchildren, with a view toward shaping a reform agenda for the next generation. Topics include the role of the judiciary in shaping the contours of educational reform, the achievement of goals in the classroom are emphasized.

Environmental Law Writing Seminar. This seminar is designed to immerse students in the complexities of litigation involving environmental pollution. Practical, realistic approaches to environmental litigation and the achievement of results in the courtroom are emphasized.

Environmental Remedies. This course provides students with a sophisticated understanding of the range of remedies available to plaintiffs in environmental litigation, both public and private. The class focuses on the remedies and defenses available under the common law, the California Safe Drinking Water and Toxic Enforcement Act, the federal Comprehensive Environmental Response Compensation and Liability Act, and the federal Resource Conservation and Recovery Act.

Estate Planning and Taxation. This course is a ba- sic study of federal estate and gift taxes, and select associated features of the income tax, with some attention to elementary estate and gift planning.

Estates and Trusts. This course provides an introduction to testamentary succession, the drafting and enforcement of wills, limitations on the power to bequeath, and the use of trusts and other devices to create and 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 topics. Topics include relevance, the rule against hearsay, and the rules of exclusion, and lay and expert opinions. Discussion includes allocation of decision-making authority among judge, jury and adversaries, and between trial and appellate courts.

Evidence 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 prepare 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 spousal 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 federal statutes that give rise to the bulk of complex criminal prosecutions in the federal system, including mail and wire fraud, RICO and federal narcotics, and tax offenses. Federal sentencing guidelines and 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 interactions 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 rights; and the use of federal law to promote transformation; and natural resources on Indian lands.

Feminist Jurisprudence. This course examines feminism 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. Course materials will include feminist legal theory; feminist scholarship from other disciplines; and occasional, illustrative examples from fiction and film.

Feminist Legal Theory. This course examines feminism 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, and the supervision of law students (Practitioner-Supervised Clinical), and judicial externships for 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? While the second focuses on “Anglo-American” analytical literature, it also surveys postmodern and critical perspectives. The latter part of the course reviews some philosophical problems within specific domains of law, such as the conflict 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 the merits of normative economic analyses 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 foundations of liberal toleration, 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 licensing, informed consent, medical malpractice, regulations governing health insurance and finance, public subsidies for healthcare, laws relating to death and dying, and selected issues of biomedical ethics.

Income Tax I. This course uses statutory, judicial and legal materials as a guide 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 experience and implications of the law and its potential use to implement 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.
International Business Transactions. Intellectual property (IP) is at the core of the integration of market and nonmarket strategies of e-business enterprises. IP rights and the legal system in general influence many of the conduct that affects the environment of companies. This course provides an introduction to the economics and law of intellectual property and applies these concepts directly to established and emerging e-business enterprises. This course presents entrepreneurs and future e-business managers to manage the legal and nonmarket environment of e-commerce in a way that allows them to protect and strategically expand the operations of their enterprises.

Intellectual Property Transactions. This course covers paradigms involving intellectual property rights in the modern economy. Topics include the law of ownership of rights; assignment of rights, especially in the employment context; licensing transactions; and the protection of the international investor. Knowledge of securities regulation and investment banking is useful but not required.

International Human Rights. The seminar introduces students to the international human rights legal system, the protection of human rights, controlling international human rights, and the impact of the international community. A substantial portion of this course focuses on the role in international and national tribunals in the law-making process of the international human rights laws. The seminar concludes with the impact on modern developments in jurisdiction, international agreements, the law of the sea, and international economic law. Special consideration is also given to the impact of the United Nations.

International Tax Law. This course focuses on the international aspects of United States and European Union taxation regulation of international economic affairs, unfair trade practices, American antidumping and countervailing duty laws, and the legal structure and processes of the World Trade Organization (WTO). The WTO dispute settlement process, tariffs, quotas, nontariff trade barriers, most-favored nation status and national treatment clauses, and the World Investment Agreements are discussed. The seminar concludes with the impact of international taxation and the taxation of foreign-source income and foreign persons with domestic-source income. Emphasis is placed on the underlying problems the law attempts to address and on present or proposed solutions. Special attention is paid to the tax problems faced by U.S. citizens and residents investing or doing business in foreign countries, and, in particular, on the U.S. taxation of income earned by U.S. taxpayers abroad.

International Trade. This course provides an introduction to American trade law and the world trade system. Topics include the Constitution and the statutory regulation of international economic affairs, unfair trade practices, American antidumping and countervailing duty laws, and the legal structure and processes of the World Trade Organization (WTO). The WTO dispute settlement process, tariffs, quotas, nontariff trade barriers, most-favored nation status and national treatment clauses, and the World Investment Agreements are discussed. The seminar concludes with the impact of international taxation and the taxation of foreign-source income and foreign persons with domestic-source income. Emphasis is placed on the underlying problems the law attempts to address and on present or proposed solutions. Special attention is paid to the tax problems faced by U.S. citizens and residents investing or doing business in foreign countries, and, in particular, on the U.S. taxation of income earned by U.S. taxpayers abroad.

Internet and Software Issues in Patent Law. This course offers students the opportunity to encounter and discuss research at the forefront of international law scholarship. Many classes feature guest speakers who present their work in progress.

Introduction to International Property. This course is designed to prepare students for property and law courses. The seminar begins with an analysis of the competing policies underlying intellectual property law. Topics include the basics of trade secrets, patents, copyright, and trademark law; and licensing, ownership, and antitrust issues; in addition to the infringement of rights and requirements for legal protection. Two areas of particular contemporary importance—genetic engineering and biotechnology—are considered in depth.

Introduction to Law and Economics. This course provides one of the major theoretical perspectives on the study of law in American universities. In this course, students learn to construct and critique economic models of the incentive effects of different legal rules and institutions.

Judicial Extern Seminar. The seminar addresses various aspects of the judicial process and focuses on the substantive law. The seminar provides an appreciation for the legal system and the role of the judge. Emphasis is placed on the role of the judge in the system, and the importance of legal education as a profession.

Jurisprudence. This course views the law from a philosophical perspective. Topics include the relationship between law and morality; legal reasoning; the justification of sanctions and rights; authority; the ethics and political theory of adjudication and legislation; and positive law and nihilism.

Jurisprudence and Social Policy Orientation Seminar. This seminar is required for all first-year students in the graduate program of the Jurisprudence and Social Policy Program. Intensive reading and discussion establish the scope of the field for degree candidates, provide them with a common core of theoretical and empirical materials, and acquaint them with options for specialization. Enrollment is limited to students in the Jurisprudence and Social Policy Program except with special permission from the instructors.

Juvenile Justice. This course examines the major juvenile justice categories and 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 trends for further reform of its juvenile delinquency jurisdiction.

Labor Law. This course considers the fundamental legal principles affecting labor relations in the private sector workplace, as 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 in include zoning and private environmental programs arising from the environmental decade of the 1970s, such as comprehensive planning, private transfers of entitlements, environmental impact assessment, citizen action, and state and federal mandates; and countervailing constraints on public authority imposed in the last decade by increasingly restrictive constitutional and statutory doctrine.

Law and Business in Japan. This is an intensive course in the comparative study of Japanese and American business systems. Rather than study the subject through traditional legal categories (e.g., contracts, torts, corporations), this course takes a topical approach. Students discuss a specific Japanese topic or phenomenon, such as ad-
ministrative guidance, keiretsu and main banks. This course covers most of the important areas of business law.

Law and Culture of Group Litigation Seminar. This seminar explores the role of lawyers and the legal system in the resolution of disputes involving groups or communities. It examines the cultural and social dimensions of group litigation and how they interact with legal rules and procedures.

Legal Research and Writing. Students learn how to conduct legal research and write legal documents, including legal memos, briefs, and legal memoranda. The course focuses on developing critical thinking skills and legal writing skills.

Legal Institutions. This course provides an overview of the American legal system, including the role of the federal and state courts, the executive branch, and the legislative branch. It also covers the history of the legal system and its development over time.

Legal and Social Justice. This course examines the relationship between law and social justice, focusing on issues of race, gender, and social inequality. Students explore the role of law in shaping social policies and the ways in which law can be used to promote equity and justice.

Law of Nonprofit Organizations. This course focuses on the laws governing nonprofit organizations, including tax-exempt status, governance, and accountability. Students study the legal landscape of the nonprofit sector and its impact on society.

Life and Death: Moral Reasoning and the Law. This seminar explores the ethical and moral dimensions of life and death, focusing on issues such as euthanasia, assisted suicide, and end-of-life care. It examines the legal frameworks and ethical principles that govern these issues.

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Law of Nonprofit Organizations. This course focuses on the laws governing nonprofit organizations, including tax-exempt status, governance, and accountability. Students study the legal landscape of the nonprofit sector and its impact on society.
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 infringement, validity and damages—are applied during trial in a variety of real-life settings.

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 employer benefits from both the client's perspective and the labor union perspective. The course employs basic tax and labor law concepts to advise the client and the union on the design, implementation and operation of health and retirement plans.

Pretrial Civil Litigation. This course is designed to acquaint students with pretrial litigation practice in typical civil commercial cases. It covers pleadings, written discovery; preparing for, taking and defending depositions; and oral argument. Topics include: strategies, settlement considerations, client relations and other topics relevant to typical litigation practice are also addressed.

Pretrial Criminal Litigation. This course examines the fundamental structure of the criminal court system, from arrest to disposition. It focuses on the creative pretrial strategies 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 pretrial practice, including traditional and nontraditional courtroom techniques, and also promotes thoughtful discussion of the criminal justice system and the inherent abuses that predominate.

Professional Responsibility for Environmental Litigation. This course explores professional responsibility and the regulation of the legal profession through the lens of environmental practice. The course provides students with the information and experience necessary to recognize, analyze and resolve problems of legal ethics and professionalism that may arise in the course of complex environmental practice. Students explore their current and potential ethical obligations that are set forth in the ABA Model Rules of Professional Conduct, the ABA Model Code of Judicial Conduct, the Rules of Civil and Criminal Procedure and relevant current and historic case law.

Public Interest and Nonprofit Organizations. This course focuses on the distinctive legal, ethical and policy issues that arise for attorneys representing nonprofit and charitable organizations. It considers what it means to be a public interest or nonprofit organization and focuses on the advantages and disadvantages of alternative organizational forms, the potential liabilities of members, obtaining and maintaining most-favored tax-exempt status, directors' duties and liabilities, Attorney General regulation, and the regulation of the legal profession through the bodies of women are seen as central to the society's conceptions and regulations about them, and differences in various settings. The class explores provisional and permanent injunctive relief, declaratory relief, reformation, restitution, unjust enrichment, specific performance, the various kinds of attorney's fees, and associated procedural issues and defenses.

Representing the Technology Company. This practice-oriented advanced corporate and securities law seminar provides students with an understanding of the business and transactional context in which various legal issues arise in the venture capital backed emerging-growth company. The seminar covers selected corporate and securities law issues in areas such as business organization, equity compensation, bank financings, initial public offerings and acquisitions.

Reproduction and Sexuality Seminar. Female bodies are regulated in different ways, both inside and outside the law, than are male bodies. Women's bodies, or society's conceptions and regulations about them, have provided much of the historical and legal justification for discriminatory practices. The female body remains the site of much that is contested in law and society. The bodies of women are seen both as central to the reproduction of society's reproduction and its techne, and as a site where one of the most basic tools in business transactions is found: the trade in bodies.

Research Topics in Corporate and Securities Law. This seminar is designed for students working on substantial written work dealing with corporate or securities law. The seminar discusses legal academic writing as well as possible topics for written work. Students are expected to make presentations of their work at the end of the semester.

Resolution of Private International Disputes. This course explores the prominent issues faced in resolving international commercial transactions. The course addresses the law of contract disputes and a tort claim are considered in the context of international arbitration and transnational litigation. Post-proceeding issues, such as challenging arbitrability, arbitral awards, and the recognition and enforcement of foreign judgments and arbitral awards, are also examined.

SAMUELSON, LAW, TECHNOLOGY AND PUBLIC POLICY. Students in the SAMUELSON, Law, Technology & Public Policy Clinic help shape public policy by developing new regulations, advocating for 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, and the effect of intellectual property laws on the global distribution of essential medications.

Secured Transactions: Article 9. This course focuses on one of the most basic tools in business transactions: the secured loan. This course examines the basics of Article 9 of the Uniform Commercial Code, the rules that govern repossessions 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 Litigation Reform Act of 1995. The course reviews a number of the recent mega-fraud cases, such as Enron, Waste Management and McKesson. Ethical issues facing practitioners are also addressed.

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 over-the-counter markets. The course covers the regulation of tender offers and anti-takeover measures (including advising the board of directors), disclosure obligations in securities transactions, broker-dealer regulation, insider trading under federal laws and civil liabilities under federal and state securities acts.

Separation of Powers. This course provides an in-depth examination of the relationship among the three branches of federal government, focusing on different theoretical approaches to the separation of powers and then examining the checks and balances that each branch has over the others.

Sex-Based Discrimination. The course examines the validity of distinctions based on sex in U.S. law, in light of the theory, underlying the sex-based discrimination. 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 Law. 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 accommodations. Issues include the nature of sexual harassment, the nature of laws prohibiting it, the nature of laws prohibiting it, the nature of laws prohibiting it, and the organization of gender.

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 government and other institutions to disadvantage people because of their sexual orientation. The course looks at issues of equal protection and due process/privity, and explores how courts have used these doctrines in consideration of lesbians, gay men, bisexuals and transgender individuals in critical contexts of their lives (including education, housing, family relationships, etc.). It also examines the philosophy that informs each doctrine to see if law ought to be helpful in coping with sexual orientation discrimination in various contexts.

Small-Business Counseling. This course teaches students for counseling and assisting small businesses (organized either for-profit or not-for-profit), while also identifying critical practice issues involved in representing business clients. The course begins with an overview of the general nature of business clients’ legal issues. Traditional topics addressed in the course are the formation and running of small businesses, the drafting and enforcement of business agreements, the handling of business disputes, and the representation of all marginalized clients.

Social Justice: Skills and Practice Issues. This skills and policy course emphasizes preparing students for public interest practice and the representation of individuals and other marginalized clients.

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Social Justice Workshop. This workshop offers basic corporate law taught from a social justice perspective. Students learn how the American corporation works, with an emphasis on legal mechanisms of accountability. It also addresses the theoretical debate about whether the corporation should be held responsible to entities other than the investor and how economic globalization and global trade and investment debate today. In addition, the workshop surveys various tools for increasing corporate social responsibility through mechanisms both internal (market-based regulation) and, more recently, with greater emphasis on liability, domestic regulation, and international regulation. Students also learn how comparative law and current U.N. initiatives bear on corporate accountability.

Social Justice Writing Seminar: The Role of the Bar Exam in Shaping the Legal Profession. Research shows that racial disparities in the bar passage rates shape entry into the legal profession. This seminar addresses the implications of this research for social justice law firms. Students may examine some issues, such as the relationship of racial disparities to delivery of legal services to underserved communities; the impact, if any, of those disparities on applications by people of color to law school; testing methodologies used to address racial disparities; comparative methods of legal licensing in other countries; or comparisons of attorney licensing methods with methods used to determine minimal competence in the medical profession.

Street Law. The Street Law Program operates in conjunction with approximately 50 Bay Area schools and their respective school districts and juvenile courts in San Francisco County. Law students, working under faculty supervision, serve as student instructors and teach a course titled Street Law. This program promotes legal literacy among young people to ensure that they possess the minimum practical legal knowledge to understand the system and to know how it can work on their behalf. Law student instructors teach units in housing, consumer, family, criminal and constitutional law. They also participate in weekly seminars and develop additional material on California law to be used in the classes.

Tax Policy. This seminar examines important issues of federal tax policy and theory. Illustrative topics include consumption versus income taxation; indexing for inflation; integrating corporate and personal income taxes; tax incidence; tax expenditures, wealth and property taxes; death and gift taxes; tax reform; value-added tax proposals; Social Security taxation; incentives for saving, work and investment; and tradeoffs among equity, social policy and efficiency.

Techniques of Financial Analysis for Lawyers. This survey course introduces the concepts and principles of finance, as they relate to the practice of general business law. The course is geared especially to the law student who does not have a significant business background, and focuses on financial decision making including: financial forecasting, investment analysis and design, determination of capital costs, valuation of businesses, and mergers and acquisitions.

Telecommunications. This course examines the statutory and constitutional limitations on the regulation of voice, video and data communications. Course material includes broadcast, cable, wireless and telephone systems, as well as new and emerging communications technologies. The course covers the historical development of related laws and the major issues currently being debated in several key areas of telecommunications regulation.

Tort Stories Seminar. Torts Stories is the title of a new book that presents the stories behind 10 famous torts cases. The seminar is devoted to reading torts casebooks. Written by torts instructors from across the country, these stories provide insights into the cases beyond what can be learned from merely reading an edited version of the case. The stories are different from the traditional doctrinal critiques of famous appellate opinions one reads in law review notes and comments. This seminar focuses on a critical review and evaluation of the 100 torts stories. Each student will select a torts case and write a story about it that will later be read and critically discussed.

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 process of trade secret litigation.

Trademarks. This advanced course in international trademark law and practice covers various theories of trademark/trade name infringement and dilution, including defenses such as parody and fair use. 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 basic course in trial practice focuses on trial advocacy skills, including factual and legal preparation for trial, trial objection, introduction of demonstrative and real evidence, direct examination, cross-examination, examination of expert witnesses, opening statements, closing arguments, jury selection and courtroom communication skills. The heart of this course is student performance of trial problems that are videotaped and candidly critiqued.

Trial Practice: Criminal. This course is designed for students who are interested in trying criminal cases. The emphasis is on determination of written work is required. Areas covered include client interviews, initial stages 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 (constitutial 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 advising that justice’s position on each of the cases, and writing one majority opinion of substantial magnitude and one concurring or dissenting opinion.

Voting Rights. This course examines voting and related forms of political participation as aspects of citizenship and asks how the understanding of political participation is implicated in the ways legal decision makers have sought to regulate these activities. The course explores the meanings of voting, derived from theoretical materials on the rationality 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 regulation of international treaties and the Voting Rights Act. Additional topics include bone and minority vote dilution under the Voting Rights Act. In addition it explores a contemporary controversy regarding voting.

Water Law. This course emphasizes western water law, with special attention to California. It deals with the evolution of public and private water rights, the area of origin claims, federal and Indian reserved rights, and interstate controversies. Water pollution is dealt with only peripherally. The theme of the course is that water is a distinctive species of property, a community resource that can never be fully privatized and that must be used in the public interest.

Workshop in Law, Philosophy, and Political Theory. This course provides an opportunity for students to engage in a seminar-style exploration of moral and legal political theory. It should be of particular interest to students contemplating an academic career. Each week a distinguished visitor 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. This workshop is an opportunity for students to work directly with and counsel governments 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 of the assignments, and produce a written product suitable for the organization’s needs. Students also meet intermittently to discuss issues of professional 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- and third-year students may also earn credit for student-initiated educational projects as follows:

The Group Research Projects Program enables students to study or research special legal topics, 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 the Boalt Hall law review and as a member of the editorial board. Credit is also available to second- and third-year students for work as a research assistant for faculty supervisors, Academic Support Program tutors, and First-Year Writing Program student instructors.

Legal Studies
(School of Law, Boalt Hall)
Program Office: 2240 Piedmont Avenue, (510) 642-4038 http://www.law.berkeley.edu/legalstudies

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.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 who teach in the graduate program in Jurisprudence and Social Policy. The courses build on the contributions of philosophy, history, sociology, political science, economics, psychology, and anthropology, as well as 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 preparing 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 course work is required in each of the following areas: introductory statistics, introductory economics, introductory philosophy, and European history. Students may declare the major after completing course work 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 Pro-
gram office and on the Legal Studies web site. 

Upper Division Requirements. A minimum of 32 upper division units is required 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. Le-
gal and Social Theory; B. Historical/Comparative;
C. Principles and Problems of Substantive Law; D. Ad-
ministration of Justice. The remaining units may be
selected from any courses in all of the above, with
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 the course groupings listed above. The Group A requirement insures that all students are exposed to conceptual analysis and broad intellectual perspectives. 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 that students can relate legal doctrines to social policies and historical contexts. The Group D requirement insures that students in the major have familiarity with some of the important aspects of legal procedure or, more broadly, legal process. These courses use relevant insights from the social sciences, legal theory, and organizational theory, to illuminate the dynamics of law-making, adjudication, and im-
plementation.

Honors Program. With consent of the major ad-
viser, a student majoring in legal studies with an overall GPA of 3.3 and a GPA of 3.5 in legal studies
may be admitted to the Honors Pro-
gram. The honors student is required to enroll in H195, the legal studies honors course, for one or two
semesters (at the instructor’s option) and to publish a
thesis. Further information on the major in legal studies may be obtained from the program office and on the internet. Readings will include legal theorists, court cases, and historical case studies. (F.S.P) Smith

116. Legal Discourse 1500-1700. (4) Three hours of lecture and one hour of discussion per week. This course focuses on the history of legal thought and discourse from the late medieval period to the Enlight-
enment. Topics to be considered include the rela-
tionship between legal thought and intellectual developments and the relationship between political and constitutional developments and legal discourse. Although the emphasis is on England, there will be some consideration of some major Continental and global European legal thought.

117. Representation of Law in American Fiction. (4) Course may be repeated for credit. Three hours of lecture
and one hour of discussion per week. Prerequi-
sites: Minimum sophomore standing. This course ex-
amines the ways in which literature has repre-

sented law in different historical periods.

121. Law in the Bible. (4) Four hours of lecture per week. Topics include law as the divine command, the

122. Prudence and Law. (3) Course may be repeated for credit. Three hours of lecture and one hour of dis-
tinction between natural and positivist views of law

140. Property and Liberty. (4) Three hours of lecture and one hour of discussion per week. This course will
explore the relation between property law and limits of

144. Comparative Private Law. (4) Three hours of lecture and one hour of discussion per week. Prerequi-
sites: Minimum sophomore standing. The law of

145. Law and Economics I. (4) Three hours of lecture and one hour of discussion per week. Prerequisites:

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*Professor of the Graduate School
†Recipient of Distinguished Teaching Award

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147. Law and Economics II. (4) Three hours of lecture and one hour of discussion per week. Law and Economics I is not a prerequisite for Law and Economics II. Students may take either or both courses. This course examines the mechanisms to influence the provision of goods and services. Economists and lawyers have developed a critique of these mechanisms which has prompted substantial reforms in recent years, particularly in the context of transportation. The course examines this critique.

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 identity and political life. These issues have an important bearing on legal theory as well. Law is shaped by certain implicit assumptions about the nature of individuals and collectivities, while it also actively participates in forming the identities of persons and in structuring collective entities such as 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” relations? This advanced topical course provides a legal, social, and constitutional analysis of the family. How do these principles, as well as cultural and social values, guide the state in determining marriage, family, and child welfare policies? (F,SP) Hollinger

160. Punishment, Culture, and Society. (4) Three hours of lecture and one hour of discussion per week. This course examines the social construction of punishment and the regulation and control of individuals. How is punishment viewed? How are the social and cultural contexts of punishment perceived? How is identity shaped by law and punishment? (F,SP)

161. Law in Chinese Society. (4) Three hours of lecture and one hour of discussion per week. The course examines concepts that form 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 the operation 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 juvenile justice system and the theoretical bases for it. The course examines the history of the juvenile justice system, the meaning and direction of current trends.

This course examines recent American legal and social theory with respect to reproductive and sexual behavior. We will consider two theoretical aspects of the problem: first, theories of how law regulates social behavior and practices. Second, we will examine critically how law and political culture shape and support the reproduction is socially regulated. Armed with these theoretical perspectives, the course will then examine closely a number of legal/social conflicts, 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 process by which suspected criminals are apprehended, punished? (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 taking 176. Development 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 constitutional history from colonial times to the present. Topics include colonial legal institutions, early constitutional history, history of the common law, business regulation, race and the law, history of the legal profession, and the modern constitutional order. (F,SP)

178. Seminar on American Legal and Constitutional History. (4) Two hours of seminar per week. Prerequisites: Consent of instructor. Enrollment is limited. This course will provide advanced reading and independent research in the history of American law. Preference may be given to students who have taken 177.

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.

182. Law, Politics and Society. (4) Three hours of lecture and one hour 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 conflict, adapting to social change, 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)

184. Sociology of Law. (4) Three hours of lecture and one and one-half hours of discussion per week. Prerequisites: Sociology 1, 3, 3AC, 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 representation of justice; social knowledge and the law. (F,SP)

184. Sociology of Law. (4) Three hours of lecture and one and one-half hours of discussion per week. Prerequisites: 1, 3, 3AC or 3 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.

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 inequality based on race, 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 bodies of legal scholarship, feminist legal studies, critical race theory, and Latina/o critical legal theory (LatCrit). The course situates this scholarship as applied to discrimination and socio-legal contexts, alongside such movements as sociological jurisprudence and critical legal studies, as well as more recent developments in legal theory. The course focuses on classic articles within feminist scholarship, as well as key legal cases. (F,SP) Sanchez

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 study in law and society with specific topics to be announced. (F,SP)

H195A-H195B. Honors in Legal Studies. (4) Hours to be arranged. Students may take H195A either letter-graded or In-Progress. Prerequisites: Senior standing, acceptance into Honors Program in Legal Studies. This course is 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. Enrollment is restricted; see the Introduction to Courses and Curriculum section of this catalog. One to four hours of lecture 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)

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: Upper division standing. Consent of instructor and approval of Program Chairman. Enrollment restrictions apply. Consult the Legal Studies department for more information. (F,SP)

Letters and Science

(College of Letters and Science)

Office: 113 Campbell Hall. (510) 642-1483
http://ls.berkeley.edu
Executive Dean, Letters and Science: Rajo J. Hexter, Ph.D.
Divisional Deans:
W. Geoffrey Owen, Ph.D. (Biological Sciences)
Mark Richards, Ph.D. (Physical Sciences)
George W. Breslauer, Ph.D. (Social Sciences)
Robert C. Holub, Ph.D. (Undergraduate Division)
Associate Deans of the Undergraduate Division:
Steven K. Bortolussi, Ph.D.
Richard A. Rhodes, 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 style of study and communication 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 considered if they have completed more than 80 semester (120 quarter) units. The dean of the college reserves this to his policy in unusual circumstances. Applicants with advanced-placement credit may, however, exceed the 80 semester unit limitation by the amount of their 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 requirement, the foreign language breadth requirement, and the quantitative reasoning breadth requirement of the college. Students who apply as intercampus transfers and who have completed all the Letters and Science breadth requirements, or the general education requirements, or the equivalent of either, at the University of California campus from which they transfer may, upon petition, be credited with having completed the breadth requirements of the college. Transfer students who apply from community colleges in California have the option of fulfilling lower division breadth requirement by completing the Intersegmental General Education Transfer Curriculum (IGETC). This program specifies a series of subject areas and types of courses which, if completed before transfer, will satisfy the other breadth or general education 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 addition have completed the minimum subject prepa- ratory work with a grade-point average of 2.00 (C average) or higher. The subject preparation listed below is minimal; transfer students who wish to declare a major in a biological science are urged to consult directly with the department or program in which they are interested to learn of additional requirements or of any restriction placed on entry to the major. The subject preparation for majors in the biological sciences is as follows:

Students who have completed 60 to 70 semester units:

1. General chemistry with laboratory (equivalent to one year of Berkeley's inorganic chemistry with laboratory).

2. General biology with laboratory (equivalent to Berkeley's Biology 1A-1B).

Students who have completed 71 to 80 semester units must complete in addition to points 1 and 2 above:

3. Introductory organic chemistry with laboratory (equivalent to Berkeley's organic chemistry with laboratory).

Requirements for the Bachelor of Arts Degree

Students must complete a minimum of 120 semester units, distributed according to regulations which appear in the College of Letters and Science's Guide to Earning Your Degree. A 15-unit concentration per semester is considered to be a normal course load; a class list of fewer than 13 units requires the special permission of the dean. There are also scholarship, minimum-progress, residency, and major requirements; these are described in the announcement as well. Brief descriptions of the breadth, major, and minor requirements appear below. Major and minor programs 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, and the Berkeley campus American Cultures requirement.

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 of the college, in order, according to their requirements of the semester system, whether the course work is undertaken at Berkeley or elsewhere.

2. Quantitative Reasoning. This requirement may be satisfied by satisfactory performance on 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 course work, 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 satisfied by (a) completion of the third year of one foreign language in high school with a minimum grade of C- or (b) completion of the second semester of a Berkeley course, or its equivalent elsewhere, 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 in a standardized form (CEEB) or the College Entrance Examination (if taken before admission to the college), or an acceptable foreign language placement examination administered 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, 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 group majors in American studies, Asian studies, Celtic studies, cognitive science, developmental psychology, environmental studies, ethnic, cultural, and social studies, feminist 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, complete a minor program of study. Furthermore, the 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 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 administratively from their major field. The college has set the following minimum requirements for completion of a minor program:

1. 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.

2. 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 program for 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 studies. UGIS also supports the following majors in international and area studies (101 Stephens Hall, (216 Dwinelle Annex, (510) 642-4468): 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 offers a wide range of academic programs and services for undergraduates. A world-class research university such as ours offers something special to undergraduates in 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, either in a small seminar or in a research apprenticeship, for study abroad, to apply for a national scholarship, etc. Some of the campuswide programs for undergraduates that are administered by the Undergraduate Division are described below.

The College Writing Programs (216 Dwinnelle Annex, (510) 642-5570), designed to help undergraduates
graduates 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) 642-8376, or go to http://fss.berkeley.edu.

The UC Berkeley-Washington Program, also administered by UGIS, allows undergraduates to spend a semester in Washington, D.C., combining course work 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: http://research.berkeley.edu.

The Scholarship Connection coordinates applications for scholarships 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
- Demographic Studies
- 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
- Linguistics
- Logic and the Methodology of Science
- Mass Communications
- Mathematics
- Medieval Studies
- Middle Eastern Studies
- Molecular and Cell Biology
- Music
- Native American Studies
- Near Eastern Studies
- Peace and Conflict Studies
- Philosophy
- Physical Science
- Physics
- Political Economy of Industrial Societies
- Political Science
- Population Studies
- Psychology
- Religious Studies
- Rhetoric
- Romance Philology
- 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. College Courses are designed to embody the mission of the College of Letters and Science by fostering and supporting the ideals of a liberal arts education at the highest level of excellence. This college course will celebrate and explore the cultural construction of time and place in many different cultural contexts, including, for example, our own construction of the millennium. The course will in effect comprise a world prehistory and history of ancient cultures, but this will not be a history that simply lists the sequence of great feats and monuments. It will focus on how differently people have perceived their place in the world and in time; how they have perceived history, ancestors, the future; how they have perceived different scales of place—what is distant, what is familiar. (F) Conkey, Joyce, Tringham

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 genesis and 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 106AC. This course satisfies the American cultures requirement. (Brimhall)

C70U. Introduction to General Astronomy. (4) Students will receive no credit for C70U after taking Astronomy 7A or 7B or 10. Three hours of lecture and one hour of discussion per week. A description of modern astronomy 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 Astronomy C10. (F,SP) Muller, Staff

C70V. Descriptive Introduction to Physics. (3) Students will receive no credit for C70V after taking Physics 10. Three hours of lecture and one hour of discussion per week. Prerequisites: Open to students with or without high school physics. The most interesting and important topics in physics, stressing conceptual understanding rather than math, with applications to current events. Topics covered may vary and may include energy and conservation, radioactivity, nuclear physics, the Theory of Relativity, lasers, explosions, earthquakes, superconductors, and quantum physics. Also listed as Physics C10. (F,SP) Muller, Staff

Upper Division Courses

120. The Poetics of Time and Place. (4) Two hours of lecture and two hours of multimedia laboratory per week. College courses foster and support the ideals of a liberal arts education at the highest level of excellence. This College course will celebrate and explore the cultural construction of time and place in many different cultural contexts, including, for example, our own construction of the millennium. The course will in effect comprise a world prehistory and history of ancient cultures, but this will not be a history that simply lists the sequence of great feats and monuments. It will focus on how differently people have perceived their place in the world and in time; how they have perceived history, ancestors, the future; how they have perceived different scales of place—what is distant, what is familiar. (F) Conkey, Joyce, Tringham

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 genesis and 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 106AC. This course satisfies the American cultures requirement. (Brimhall)
Linguistics
(College of Letters and Science)

Department Office: 1203 Dwinelle Hall #2650, (510) 642-2757
Website: www.linguistics.berkeley.edu

Chair: Leanne L. Hinton, Ph.D.

Professors
Leanne L. Hinton, Ph.D. University of California at San Diego. American languages, sociolinguistics, language loss and language revival
Larry M. Hyman, Ph.D. University of California at Los Angeles. Phonological theory, African languages, especially Nguni-Cong
Sharom Inkelas, Ph.D. Stanford University. Phonology, morphology, Turkish
George P. Lakoff, Ph.D. Indiana University. Cognitive linguistics, especially the neural theory of language concept, systems, conceptual metaphor, syntax semantics pragmatics; also the application of cognitive linguistics to literature, philosophy, and mathematics
Rich T. Lakoff, Ph.D. Harvard University. Semantics, syntax, pragmatics, sociolinguistics
Eve C. Sweetser, Ph.D. University of California, Berkeley. Semantics, syntax, historical linguistics, Celtic languages, speech act theory, metaphor theory, semantic change, arealization, gesture
Muray B. Emeneau (Emeritus), Ph.D., L.H.D. Yale University. Sanskrit, Dravidian and Indic folklore and linguistics
Carol F. Strong (Emeritus), Ph.D. University of Michigan. Lexicon, semantics, syntax, text comprehension, English, Japanese
Philip S. Heyck (Emeritus), Ph.D. Harvard University. Grammar, lexicon, color naming
James A. Prankard (Emeritus), Ph.D. University of California, Berkeley. Southeast Asian languages, especially Tibeto-Burman and Austronesian languages, Yiddish studies, historical semantics, psychosemantics, language typology, area linguistics
John T. Ohala (Emeritus), Ph.D. University of California at Los Angeles. Experimental phonology and phonetics, historical phonology, areal aspects of communication, speech technology
William S.-Y. Wang (Emeritus), Ph.D. University of Michigan. Language change and evolution, Chinese linguistics
Kochi L. Zimer (Emeritus), Ph.D. Columbia University. Turkish, word formation, history of linguistics

Associate Professors
Andrew Garrett, Ph.D. Harvard University. Indo-European linguistics, historical linguistics, language change, Northern California Indian languages
Gretchen Holtforth, Ph.D. University of California, Berkeley. Indo-European linguistics, historical linguistics, history of historical linguistics
Sam A. Mchombo, Ph.D. University of London. Syntax, African linguistic structures, Swahili
Richard H. Rodes, Ph.D. University of Michigan. American Indian languages, grammatical theory, phonology and arealization

Assistant Professors
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, Southeastern Pueblo languages

Adjunct Professor
Ian Maddieson, Ph.D. University of California, Los Angeles. Phonology, physical universals, artificiary and acoustic phonetics, African, Austronesian, Southeast Asian, and Sino-Tibetan languages

Affiliated Professors
William F. Hanks, Ph.D. (Anthropology)
Johanna Nichols, Ph.D. (Slavic Languages and Literatures)
Dan L. Slobin, 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 language. To provide an introduction to the study of language drawn 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 the field of biology, psychology, history, and philosophy. 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 totalling a minimum of 10 additional upper division units are added to the core through consultations between students and major advisers. The major’s minimum degree requirements of these units, five must be selected from upper division and graduate-level offerings within the Department of 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.

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).

Honor 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. This 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 critically 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 specialization.

Prerequisites. Linguistics 100 with minimum grade of C.

Requirements: Upper Division. Any two of the following courses: Linguistics 110, 115, 120, 130.

Graduate Programs
The Department of Linguistics has strengths in many areas: phonetics, morphology, phonology, 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 also committed to linguistics 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 students 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.

Major’s Degree in Linguistics. Students may be recommended for the major’s degree after completing 12 units of coursework or after failing the major’s degree plan. 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, 191, 250A, 250B, 250C, 250D, 250E]; one course from the set [210, 211B, 215], and one course from the set [205, 220B]. 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 other 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 satisfies the requirements for the doctoral section of this catalog with some augmentations. For information on the further requirements, go to the department web site atwww.linguistics.berkeley.edu.

Linguistic Society of America Summer Institute.
The U.S. principal scholarly organization representing the field of linguistics is Linguistic Society of America (1325 18th Street N.W., Suite 211, Washington, D.C. 20036-6501, telephone (202) 835-1714, www.lsa.org). The organization sponsors a six-or eight-week program in linguistics every other summer, in collaboration with some co-sponsoring university. Both graduate and undergraduate students must be tentatively registered to take part in such linguistic programs which offer a wide range of courses, seminars, conferences, workshops, and lecture series, covering development of the field and areas of interest in which no single university can offer a course.

Lower Division Courses
1A-1B. Elementary Swahili. (4) Four hours of recitation and one hour of laboratory per week. (F) Mchombo
2A-2B. Elementary Language Tutorial. (3) Course may be repeated for credit. Hours to be arranged. Pre-requirements: Requires special permission. Apply to Center for African Studies. Specialized tutorials designed for individuals or small groups needing instruction in African languages not normally offered on the Berkeley campus. (F)
5. Language and Linguistics. (4) Three hours of lectures and one hour of discussion per week. An introduction to the scientific study of language. (F,SP)
R6. Linguistics Writing Workshop. (2) Two hours of workshop and two hours of private meetings with composition tutor. Formerly RSW. A 2-unit writing workshop where students enrolled in one of the following courses may be taken passed/not passed: 5, Introduction to Linguistics (for nonmajors); 11, Writing Systems; 16, English Vocabulary; 21, Languages of the World; 51, Politics of Language; 52, Languages and You; 55, The American Languages; 100, Introduction to Linguistics (for majors). Satisfies the second half of the Reading and Composing and the second requirement for the major. In addition to attending class sessions, there will be two additional 1-hour meetings with a composition tutor. Requirements: readings, exercises in writing and analysis of written passages and two large writing assignments on topics related to language and linguistics. No final exam. (F,SP)

11. Writing Systems. (3) Three hours of lectures per week. Examines different writing systems in terms of their historical origin and their cognitive properties. Enrollment limited to 15 students.


21. Languages and Peoples of the World. (3) Three hours of lecture per week. The languages and language families of the world, their origins, and whether and how they are related to each other. The origins of human language and the age of human languages. How language (or language family) correlates or (does not correlate) with human genetics. Linguistic evidence for the major events in the human settlement of the
world; spread out of Africa, early diversification in Asia, the settlement of the Pacific and the Americas, the development of agriculture and herding, the rise of empires. The oldest written languages and their origins. The future of language. 24. Freshman Seminar. (1) Course may be repeated for credit once per semester. Sections 1 to 2 to be graded on a letter-grade basis. Sections 3-4 to be graded on a pass/failed 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. 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 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. 52. Languages and You. (3) Three hours of lecture per week. This course is intended for the nonspecialist concerned about complex linguistic issues currently salient in all areas of discourse. As speakers, students, listeners, members of families, workers, citizens of this country, and members of the global community, we need to understand how language works in order to make informed decisions at all levels. We will examine issues such as language and authority; language and gender; language and power; and language in a global context. R. Lakoff 55AC. The American Languages. (4) Three hours of lecture and one hour of discussion per week. A linguistic view of the history of the languages spoken in the United States. The variety of languages spoken in our country and the issues surrounding them: language and ethnicity, politics of linguistic pluralism vs. societal monolingualism, language and education, language shift, loss, retention, and renewal. Languages include English (standard and nonstandard; Black English), pidgins and creoles, Native American languages, 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 eight weeks. Sections 1 to 3 to be graded on a pass/failed basis. Sections 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. 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 pass/failed basis. Prerequisites: 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 the mind. This course focuses on current cognitive science findings about language processing and explores how these findings can inform educational training. Specifically, students will examine findings that will give them insight into the 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 other departments, will cover specific foci within cognitive science that relate to education and language acquisition. Subsequent discussions and one-on-one tutoring or group discussions will build on these foci. 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. (1-5) Course may be repeated for credit. Must be taken on a pass/failed basis. Group study of a topic not included in the regular department curriculum. (F,SP) Upper Division Courses 100. Introduction to Linguistic Science. (4) Three hours of lecture and one hour of discussion per week. A basic technical introduction to linguistic science. Practice in phonetics, production, and transcription, and in phonological and morphological analysis; basic concepts in grammatical parsing and textual analysis. (F,SP) C105. The Mind and Language. (4) Three hours of lecture and one hour of discussion per week. Formerly 106. Conceptual systems and language from the perspective of cognitive science. How language gives insight into conceptual structure, reasoning, category formation, metaphorical understanding, and the framing of language and experience. Concepts, mental categories, implications from and for philosophy, anthropology, literature, artificial intelligence, and politics. Also listed as Cognitive Science C101. (F,SP) G. Lakoff, E. Sweetser 106. Metaphor. (4) Three hours of lecture and one hour of discussion per week. Lower division students must have instructor approval. The role of metaphor in structuring 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, E. Sweetser 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 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, exponentials, 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^{i\pi} + 1 = 0. Why mathematics is not an objective feature of the universe. Also listed as Cognitive Science C107. G. Lakoff 108. 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 issues—imagination, causation, the self, and morality—and the cognitive structure of the philosophical theories of the Precursors, Plato, Aristotle, Descartes, Kant, and Hegel. 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 61B and Cognitive Science C101, C105 or Cognitive Science C101, C105 or Computer Science C182. Functional primate neuroimaging is driving the field of the neuroscience of cognition. 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 network of neurons, to think and do anything? (2) How do we learn, use, and understand language? (2) How are language and thought related to perception, motor 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 anatomy and mechanism, using models and simulations of language and learning phenomena. Also listed as Cognitive Science C110 and Computer Science C182. (SP) Feldman, G. Lakoff 110. Introduction to Phonetics and Phonology. (4) Three hours of lecture and one hour of discussion per week. Prerequisites: 100 or concurrent enrollment. Description, transcription, and analysis of human speech sounds in their physiological and acoustic aspects, especially the aids our understanding of sound change and the psychological mechanisms serving speech. 111. Phonological Theory. (3) Three hours of lecture per week. Prerequisites: 110. Introduction to the principles of classical generative phonology and non-linear phonology. 115. Phonology and Morphology. (4) Three hours of lecture and one hour of discussion per week. Prerequisites: 100 and 120. An introduction to the study of the structural properties of sentences and the connections between sentence structure and sentence meaning. (SP) 121. Logical Semantics. (3) Three hours of lecture per week. Prerequisites: 120 or consent of instructor. Basic logical concepts. Truth, denotation, and their relation. Models and interpretation. Translation from natural language into logical form and compositionality. Quantification and scope. Intensionality, context-dependency, and presupposition analysis involving a wide range of phonological phenomena. 131. 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. 150. Syntax 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) 155AC. The American Languages. (4) Three hours of lecture and one hour of discussion per week. Prerequisites: At discretion of instructor. An introduction to the study of the structural properties of sentences and the connections between sentence structure and sentence meaning. (SP) 159. 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 different languages. Topics will include interrogatives, pronoun systems, relative clause formation, case systems, etc. 160. Methods of Language Typology. (3) Three hours of lecture per week. Prerequisites: 100 and 150. The relation between language and human actions. Some topics to be examined: the semantic properties of language, politeness, social role, psychological perception of oneself and language, variation in language use. R. Lakoff 163. Discourse. (3) Three hours of lecture per week. Language beyond the sentence. Global and local properties of connected speech and writing. Narrative structures, new and old information, subjects and topics, foregrounding and backgrounding, etc. 166. Formal Theories of Syntax. (3) Three hours of lecture per week. Prerequisites: 100 or graduate status. The 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 desirability and status 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. 180. 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 development 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. The linguistic background and the general principles of language spread. Mechanisms of language spread, including creolization-decreolization, language planning, and the role of bilingualism. Case studies in language spread, including Austronesian, Indo-European, Amerindian, African, Sinitic, and Australian languages. Relationship of language spread to immigration and culture spreads. Also listed as Spanish 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. The principles and methods 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. Prerequisites: consent of instructor. A review 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 use language differently: how women have different amounts of access to power via public discourse; gender differences in nondominant groups (e.g., lesbians and gays; African Americans); the role of linguistic differences between the sexes; role of gender in discourse genres. R. Lakoff

155AC. Native America Meets the Europeans. (3) Three hours of lecture per week. An overview of the contact between Native Americans and Europeans, primarily English, French, and Spanish in North America (including Mexico). Material will be drawn from history, anthropology, and linguistics to highlight the nature of contact and its effects. Starting in pre-contact times, both European and American, the discussion will range into the present, but will be most focused on the age of early contact (1500s) in Mexico and 1700-1800s in the U.S. and Canada. General background discussions will be interspersed with studies of particular cases. 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 61A recommended. A survey of computational areas and methods in linguistics, emphasizing the Chomsky hierarchy, phrase structure grammars, context-free grammars, parsing, computer science, philosophy, and neuropsychology to understand the nature of the mind. This course focuses on current cognitive 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 internal processes that underlie human language in order to apply these 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 cognitive content within cognitive science that relate to education and language acquisition. Subsequent discussion sections will examine specific tutoring strategies that build on these foci. Students will then have the opportunity to knowledge differences between one-on-one tutoring sessions with non-native speakers at UC Berkeley’s Student Learning Center.

198. Directed Group Study and Research. (1-4) Course may be repeated for credit. Hours to be arranged. Must be taken on a passed/not passed basis. (F,SP)

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. (F,SP)

Graduate Courses

200. Graduate Proseminar in Linguistics. (1) Two hours of seminar per week. Required of graduate students during first year in program. An introduction to linguistics and its history, subfields, and methodologies. (F)

201. Advanced Graduate Proseminar in Linguistics. (2) Course must be taken at the beginning of graduate student’s third year. Two hours of seminar per week. Must be taken on a satisfactory/unsatisfactory basis. Students should arrange this course during second semester of graduate study. Consent of instructor required. Thesis is due on the Monday of the 13th week of the second semester, and honors students will be invited to present their research at an Undergraduate Colloquium. (F,SP)

197. Field Studies in Applied Cognitive Linguistics. (2-3) Course may be repeated for a maximum of 4 units. One hour of discussion, and three hours of tutorial per week. Must be taken on a passed/not passed basis. Prerequisites: 5 or 100. Cognitive Science is an interdisciplinary field combining methods and findings from psychology, linguistics, computer science, philosophy, and neuropsychology to understand the nature of the mind. This course focuses on current cognitive 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 internal processes that underlie human language in order to apply these 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 cognitive content within cognitive science that relate to education and language acquisition. Subsequent discussion sections will examine specific tutoring strategies that build on these foci. Students will then have the opportunity to knowledge differences between one-on-one tutoring sessions with non-native speakers at UC Berkeley’s Student Learning Center.

211B. Topics in Phonological Theory. (3) Three hours of lecture per week. Prerequisites: 211A. Continuation of 211A focusing on topics of current interest in phonological theory. (F)

212. Advanced Phonetics and Phonology. (3) Three hours of lecture per week. Prerequisites: 210. Advanced study of the articulatory, and acoustic basis of speech production and perception.

215. Advanced Morphology. (3) Course may be repeated for credit. Three hours of lecture per week. Prerequisites: 110 or consent of instructor. Examination of complex morphological systems. Issues in the theory of word morphology. (F)

220A. Syntax and Semantics I. (3) Three hours of lecture per week. Prerequisites: Graduate standing or consent of instructor. Formerly 220. This course has two main objectives. First, the course serves as an introduction to the study of syntax and semantics within the non derivational constraint-based formal framework of Head-Driven Phrase Structure Grammar (HPSG). Second, we will explore a number of phenomena of natural language (morpho) syntax and semantics in a range of typologically diverse languages and from a variety of theoretical perspectives. Possible topics include argument structure, anaphora, auxiliaries and modals, negation, phrase structure and locality, long-distance dependencies, problems of quantification, tense and aspect systems, relative and interrogative clauses, clitics and the morphology-syntactic interface. (F)

220B. Syntax and Semantics II. (3) Three hours of lecture per week. Prerequisites: 210 or consent of instructor. Introduction to recent versions of transformational grammars. Topics include Universal Grammar, Syntactic structure and different levels of representation, empty categories, case-Teta- X, -Binding theory, A-movement, Functional heads, Logical Form and Minimalist program. (SP)

230. Historical Linguistics. (3) Three hours of lecture per week. Prerequisites: 110 or consent of instructor. The scholarly tradition of historical and comparative linguistics. Methods of reconstruction. (SP)

231. Historical Semantics. (3) Three hours of lecture per week. Prerequisites: 215. The course examines the use of linguistic data in a simulated field setting. The same language is used throughout the year. Continuation of 240A. (SP)

240A. Field Methods I. (4) Course may be repeated for credit. Four hours of session per week. Credit and grade to be awarded on completion of sequence. Prerequisites: 205 or 220, and either 210, 211, or 215. This course continues the survey of syntactic and semantic phenomena in natural languages and the methods of their description begun in 220A. (SP)

240B. Field Methods II. (4) Four hours of session per week. Credit and grade to be awarded on completion of sequence. Prerequisites: 240A. Training in elicitation and analysis of linguistic data in a simulated field setting. The same language is used throughout the year. Continuation of 240A. (SP)

250. Sociolinguistic Analysis. Three hours of lecture per week. This series of courses is designed to give graduate students in linguistics and related fields an advanced training in current theories and methods in 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, and demonstrations of methods and will be expected to do original research. The results of which are to be presented orally and in a 15- to 25-page research paper. (F,SP) Hinton, R. Lakoff

250A. Variation. (3)

250B. Language Contact. (3)

250C. Language and Gender. (3)
250D. Conversation/Discourse Analysis. (3) 250E. Endangered Languages. (3)

270. Structure of a Particular Language. (3) Course may be repeated for credit. Three hours of session per week. Prerequisites: 210 and 221. An analysis of the language structure of a particular language. The language investigated changes from year to year.

271. Linguistics of Southeast Asia. (3) Course may be repeated for credit. Three hours of session per week. Prerequisites: 230. An examination of the phonological, grammatical, and semantic characteristics of the various sub-groups of Tibeto-Burman: Lolo Burmese, Karen, Kachin, Kamanpur, and Hill. Malayalam, 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. Reading and discussion of classic works on American Indian languages, and detailed examination of one North American language family.

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) 290L. Additional Seminar on Special Topics to Be Announced. (3) Course may be repeated for credit. Hours to be arranged. Prerequisites: Consent of instructor. Seminar or special lecture courses on linguistic topics.

298. Special Group Study. (2-8) 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. Prerequisites: One full year of graduate work at Berkeley or consent of graduate adviser. 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)

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. Course may be repeated for credit, but credit for the instructional training portion is to be given only once for each individual course taught by a T.A. For graduate students currently serving as T.A.s in the Department’s undergraduate courses. Two units of credit are given for the teaching experience each time a student serving as T.A. enrolls in this course; two more units are given for teaching instruction, this taking the form of weekly consultations between instructors and their T.A.s. (F,SP)

302. Training for Linguistics Teaching Assistants. (2) Two 90-minute sections per week. Must be taken on a satisfactory/unsatisfactory basis. Prerequisites: 110, 120 and 130 or consent of instructor. A teaching-methods “clinic” for the training of at least two students. Each session will deal with the presentation of linguistic concepts in each of the foundation courses, the creation of homework assignments and examination, policies and practices regarding correction of students’ work, grading, and feedback. (F,SP)

Logic and the Methodology of Science

Group Office: 910 Evans Hall, (510) 642-0665

Professors
Robert M. Anderson, Ph.D. Nonstandard analysis
Manuel Blum, Ph.D. Recursive functions, computational complexity (Electrical Engineering and Computer Sciences)
J. Frits Staal, Ph.D. Ancient philosophy
Lester E. Dubins, Ph.D. Probability (Mathematics, Statistics)
Paul E. Johnson, Ph.D. Recursive theory, model theory, set theory (Mathematics)
Hans MacFarlane, Ph.D. Philosophy of Logic, philosophy of mathematics (Philosophy)
Paolo Mancosu, Ph.D. Logic, philosophy of mathematics (Philosophy)
George Necula, Ph.D. Computer science and computer science information and theory
Richard M. Karp, Ph.D. Algorithms, computational complexity (Computer Science)
John MacFarlane, Ph.D. Philosophy of logic, philosophy of mathematics (Philosophy)
Christos Papadimitriou, Ph.D. Algorithms, computational complexity (Computer Science)
Thomas Scantlebury, Ph.D. Model theory and diophantine geometry (Mathematics)
J. Silver, Ph.D. Set theory, model theory (Mathematics)
Theodore A. Slaman, Ph.D. Recursion theory (Mathematics)
Sungs Hwa Sung, Ph.D. History of logic, philosophy of mathematics (Philosophy)
George Stainton, Ph.D. Set theory, model theory (Mathematics)
Steve Awodey, Ph.D. Category theory, logic, philosophy of mathematics (Philosophy)
Linda Technau, Ph.D. Philosophy of mathematics, logic, philosophy of science (Philosophy)
M. R. Reitz, Ph.D. Set theory, model theory (Mathematics)
T. L. Scanlon, Ph.D. Algebraic number theory, algebraic geometry (Mathematics)
K. G. Arvanitakis, Ph.D. Philosophy of language, theory of action (Mathematics)
David Blackwell, Ph.D. Bayesian statistics, game theory, statistics (Mathematics)
J. MacFarlane, Ph.D. Philosophy of language, theory of action (Mathematics)
C. J. Chihara, Ph.D. Philosophy of mathematics, language, and mind (Philosophy)
H. W. Hugh Woodin, Ph.D. Large cardinals, determinacy and set theory (Mathematics)
Pedro Mancosu, Ph.D. Philosophy of science, philosophy of science (Philosophy)
J. W. Addison, Jr., Ph.D. Logic, theory of definability (Mathematics)
K. W. Johnstone, Ph.D. Set theory, descriptive set theory, inner model theory (Mathematics)
J. V. Vazirani, Ph.D. Complexity theory, cryptography (Computer Science)
W. Hugh Woodin, Ph.D. Large cardinals, determinacy and set theory (Mathematics)

Further information about the program, including a full statement of the requirements for advancement to candidacy, is available online at http://logic.berkeley.edu/ or from the Group Administrative Office, Group in Logic and the Methodology of Science, 910 Evans Hall, University of California, Berkeley; 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. (F,SP)

Other Departments with Related Programs
Mathematics and Philosophy
Manufacturing Engineering (College of Engineering)
Offices: 4141 Etcheverry Hall (IEOR) or 6189 Etcheverry Hall (ME)

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 in language or the social sciences selected from an approved list of courses. Two of these must fulfill the College of Engineering Reading and Composition requirement. Refer to www.cee.berkeley.edu/current_students/hsreq.html 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, 128, 136, 138, 139, 169; Electrical Engineering and Computer Sciences 100. Electives must 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,
Mass Communications / 337

Mass Communications
(College of Letters and Science)

Group Major Officer: Division of Undergraduate and Interdisciplinary Studies, 301 Campbell, (510) 642-2363
http://ls.berkeley.edu/ugis/masscommunications

Faculty Advisory Committee
John Etwood (Public Policy)
Thomas Goldstein (Journalism and Mass Communications)
David Henkin (History)
Neil Henry (Journalism)
Thomas Leonard (University Librarian)
Peter Lyman (Information Management and Systems)
Jean P. Retzinger, Ph.D. (Mass Communications)
Mark Sandberg (Scandinavian)
Laura Stoker (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 fifteenth week of each term.

Students who wish to declare the major in mass communications:

(1) must have completed at least 30 units of college course work 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 course work;
(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 concerning their eligibility and the equivalency of transferred course work.)

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 communications should submit a letter of appeal along with a completed application.

Applications and instructions regarding the admission and appeal process may be obtained from the Mass Communications Office in 343 Campbell Hall.

Transfer Students

Transfer students may complete Mass Communications 10 at Berkeley, but are urged to complete other major prerequisite courses before arriving on campus. New transfers should see the major adviser on arrival in order to have transfer prerequisite sites approved. Transfers may need assistance in adding Mass Communications 10 to their schedules.

Major Program

Prerequisites. One course from each of the following four groups. All prerequisites must be taken for a letter grade:
1. History 7B, 124A, 124B or 131B;
2. Political Science 1;
3. Anthropology 3, Economics 1, Psychology 1 or 2, Sociology 1 or 3;

Requirements for Graduation

(These requirements are in addition to the prerequisites 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 communications: Mass Communications 101, 102, and 104.
B. One of the following methods courses: Anthropology 190A; Mass Communication 120A, 120B, 121, 123, 124, 124A, 124B, 128A, 128B; Sociology 91A, 100A, 104, 105, 108, 110, 114, 140, 141, 143, 144, 149, 150, 156, 160, 162, 165, 168A, 168B.
C. Five courses from the following list: Anthropology 149, 149B, 158B, 163, 166; English 137, 176; Journalism 140, 141, 163, 182; Linguistics 150; Mass Communication 160, 170, 190; Political Science 161, 162, 164A, 164B, 168A-168B; Psychology 123, 124, 160, 162, 165; Sociology 110, 140, 150, 156, 180, UGBA 106 (formerly Business Administration 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 Program

To be admitted to the honors program, a student must have attained at least a 3.5 grade-point average in all the University and a 3.5 grade-point average in the major. In order to be granted honors, a student must write a thesis which in the judgment of the thesis director and the adviser is characterized by superior distinction (Mass Communications H195).

Lower Division Courses

10. Mass Communications in America: An Introduction. (4) Three hours of lecture and two hours of discussion per week. Prerequisites: Sophomore standing or permission of the instructor. An introduction to the history, functions, and control of mass communication institutions in the United States, and to media content and effects. (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. Freshman 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 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)

Stem from 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. 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.
Materials Science and Engineering

(College of Engineering)

Department Office: 210 Hearst Memorial Building 31060, (510) 642-5124
http://www.mse.berkeley.edu/
Chair: Fiona M. Doyle, Ph.D.

Professors
A. Paul Alivisatos, Ph.D. University of California, Berkeley.
Nanoscale science
George H. Brintnell, Jr., Ph.D. University of California, Berkeley. Economic geology
Daryl Chran, Ph.D. University of California, Berkeley.
Computational materials science
Ludwig Dejonghe, Ph.D. University of California, Berkeley.
Ceramic properties and processing
Thomas M. Devine, Jr., Ph.D. Massachusetts Institute of Technology. Corrosion

Fiona M. Doyle (Department Chair and Donald H. McLaughlin Professor of Mineral Engineering). Ph.D. Imperial College, University of London. Solution processing

James W. Evans (P. Malozemoff Chair in Mineral Engineering). Ph.D. State University of New York. Extrophic and process metalurgy

Andreas Glaser, Sc.D. Massachusetts Institute of Technology. Microstructure development, ceramic joining

†Ronald Gonsky (Arthur C. and Phyllis G. Oppenheimer Professor in Advanced Materials Analysis). Ph.D. University of California, Berkeley. Materials characterization

Eugene E. Haller, Ph.D. University of Basel. Electronic materials
Kevin E. Healy, Ph.D. University of Pennsylvania. Biomaterials and tissue imaging

Frances Hellman, Ph.D. Stanford University. Applied physics

1-J. Morris, Jr., Sc.D. Massachusetts Institute of Technology. Theoretical metalurgy, phase transformations

T.N. Narasimham, Ph.D. University of California, Berkeley. Hydrogeology

Robert O. Ritchie (H. T. and Jessie Oua Distinguished Professorship in Engineering). Ph.D. University of Cambridge. Toughness and failure of metals

Eike P. Weber, Ph.D. University College. Electronic materials

Robert H. Bragg, Ph.D. (Emeritus)
Didier de Fontaine, Ph.D. (Emeritus)

†Douglass W. Fuerstenau (Pamela J. Montgomery Chair in Mineral Engineering (Emeritus)).

†Robert G. Heron, Ph.D. (Emeritus)
K. V. S. Sastry, Ph.D. (Emeritus)

Alan W. Searcy, Ph.D. (Emeritus)
Gareth Thomas, Ph.D. (Emeritus)
Jack Washburn, Ph.D. (Emeritus)
Paul A. Witherrop, Ph.D. (Emeritus)

Vicci F. Yee, Ph.D. (Emeritus)

Associate Professor
Yuri Suzuki, Ph.D. Stanford University. Nanostructured magnetic materials

Assistant Professor
Oscar D. Dubin, Ph.D. University of California, Berkeley. Electronic materials processing

Department Overview

The Department of Materials Science and Engineering (MSE) administers undergraduate and graduate programs in materials science and engineering. In addition, undergraduate students may be admitted to one of several double major programs. Materials Science and Engineering deals with natural and man-made materials—their extraction, processing, development, and characterization for technological uses. Advanced engineering activities that depend upon optimized materials include medical device and healthcare industries, electronics and photonics, the automotive and aerospace industries, advanced batteries and fuel cells, and the emerging field of nanotechnology. Students in materials science and engineering apply a basic foundation of mathematics, chemistry, physics, 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 structural materials. Nanoscale 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 device, 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 a passive role 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 all facets of materials science and engineering. Such methods range from the theoretical prediction of electronic and photonic properties of materials to modeling fluid flow in advanced batteries, or modeling the chemical kinetics and equilibrium in a materials processing operation.

Electronic, Magnetic, and Optical Materials. This group of materials is designed to serve as functional components of devices, such as semiconductors, metals, and ceramics. These materials are used today to form highly complex systems such as integrated electronic circuits, opto-electronic devices, and modern and powerful computing. By being 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.

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 requires 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.

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, 56, 45; 15 units of electives. Note: Students may take Physics 7C and Math 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 176; 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 technical electives. The program includes elective 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, physics, or mathematics. 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/hss-requirement.html 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 and it 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 chemical engineering can all successfully undertake graduate study in materials science.

A combination of course work 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 in teaching and research) in fields 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)

Upper Division Courses

100. Field Trips. (1) Four hours of field trip per week. Prerequisites: Junior standing in materials science or consent of instructor. Visits to factories and industrial laboratories concerned with metallurgical, ceramic, or electronic aspects of the materials problems. (SP) Staff

102. Bonding, Crystallography, and Crystal Defects. (3) Three hours of lecture per week. Prerequisites: Engineering 45. Bonding in solids; crystallography; defects; elastic, plastic, and dislocation properties of metals, semiconductors, and insulators; crystal systems; point, line, and planar defects in crystals; examples of crystallographic and defect analysis in engineering materials; relationship to physical and mechanical properties. (F) Staff

103. Phase Transformations and Kinetics. (3) Three hours of lecture per week. Prerequisites: 102 and Engineering 115. The nature, mechanisms, and kinetics of phase transformations and microstructural changes in the solid state. Concepts and methods used in transport through the nucleation and growth of new matrix or precipitate phases. Martensitic transformations, spinodal decomposition. The use of phase transform-ations to control microstructure. (SP) Staff Glaeser

104. Materials Characterization. (4) Three hours of lecture and three hours of laboratory per week. Prerequisites: 102. Physical and chemical characterization of materials: Diffraction, imaging, and spectroscopy using optical, electron, and X-ray methods for bulk and surface analysis. Measurement of mechanical and physical properties. Project laboratory focusing on mechanical, chemical, electrical, and magnetic properties of materials, and materials characterization. Field trips. (SP) Staff

111. Properties of Electronic Materials. (4) Three hours of lecture and one hour of discussion per week. Prerequisites: Physics 7A-7B-7C or Physics 7A-7B and consent of instructor. Introduction to the physical principles underlying the electric properties of modern solids with emphasis on semiconductors; control of defects and impurities through physical purification, bulk and thin film crystal growth and doping processes, materials based on semiconductors for electronic devices (dodes, transistors, semiconductor lasers) and optical fibers; properties of metal and oxide superconductors and their applications. (SP) Staff Haller


C113. Mechanical Behavior of Engineering Materials. (3) Students will receive no credit after taking 113 or 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. This course covers elastic and plastic deformation under static and dynamic conditions and prediction and prevention of failure by yielding, fracture, fatigue, wear, and environmental factors are addressed. Design issues pertaining to materials selection for load-bearing applications are discussed. Case studies of engineering failures are presented. Topics include engineering materials, structure-property relationships, materials selection for design, mechanical behavior of polymers and ceramics and metals, fatigue testing and interpretation, complex states of stress and strain, elastic deformation and multiaxial loading, plastic deformation and yield criteria, dislocation plasticity and strengthening mechanisms, creep, effects of stress on deformability, fracture, fatigue, and contact stresses. Also listed as Mechanical Engineering C124. (F,SP) Staff

117. Properties of Dielectric and Magnetic Materials. (3) Three hours of lecture per week. Prerequisites: Physics 7A-7B-7C or Physics 7A-7B and consent of instructor: 111 is recommended. Introduction to the physical principles underpinning the magnetic and dielectric properties of solids. Processing-microstructure-properties relationships of dielectric materials, including piezoelectric, pyroelectric, and ferroelectric oxides, and magnetic materials, soft and hard ferromagnets, ferrites and magneto-optic and resistive materials. The course also covers the properties of grain boundary devices (including varistors) as well as ion-implanted and mixed structures useful for applications in various devices such as sensors, fuel cells, and electric batteries. (F) DeJonghe

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, biometric materials and soft tissue replacements, drug delivery, tissue engineering, and biotechnology. Also listed as Bioengineering C118. (F,SP) Healy

120. Materials Production. (3) Three hours of lecture per week. Significance of materials. Occurrence of raw materials. Properties of metals, magnetic and dielectric materials and their applications 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 metals processing with emphasis on the use of metallurgical and physical processing techniques which impart desirable engineering properties. The techniques discussed include solidification, thermal and mechanical processing, powder processing, welding and joining, and surface treatments. (SP) (Gronsky)

122. Ceramic Processing. (3) Three hours of lecture per week. Prerequisites: Engineering 45, 115. Powder fabrication by grinding and chemical methods, rheological behavior of powder-fluid suspensions, forming methods, drying, sintering, and grain growth. Relation of processing to microstructure development. (F) Glaeser

123. Semiconductor Processing. (3) Two hours of lecture and one hour of discussion per week. Prerequisites: 111 or Physics 7A-7B-7C and consent of instructor. Semiconductors; processing; solidification growth techniques; impurity doping by diffusion, ion implantation and alloy regrowth; contact formation, mechanical and chemical processing; semiconductor analysis. (F) Weber

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 141A recommended. Deposition processing, and characterization of thin films and their technological applications. Physical and chemical vapor deposition methods. Thin-film nucleation and growth. Thermally induced processes and development in epitaxial, polycrystalline, and amorphous films. Thin-film characterization techniques. Applications in information storage, integrated circuits, and optoelectronic devices. Laboratory demonstrations. (SP) Dubon

C130A. Experimental Materials Science. (3) One and two hours of lecture and one to four hours of laboratory per week. Prerequisites: 102, 103, 111, 112, 113 may be taken concurrently; Engineering 45. The processing and properties of materials will be experimentally investigated using a range of tools available to materials scientists and engineers. Experiments will investigate the mechanical, electrical, and electrochemical properties of metals, ceramics, semiconductors, and thin films. Electrochemical and thin film
techniques will be employed for processing of materials. (F) Dubon

C133. Microfabrication Equipment Laboratory. (2) One hour of lecture and three hours of laboratory per week. Prerequisites: Electrical Engineering 40 or 100, Mathematics 53 and 54, Physics 7B; an upper division course in microfabrication technology or manufac-
turing is recommended but not required (e.g., Chemical Engineering 179, Electrical Engineering 143, Me-
chanical Engineering 101, 122, Material Science 111, 123, 125). Experiments and simulations illustrating the fundamental principles of equipment and measurement technology for microelectronic and microelectro-
mechanical fabrication and manufacturing. The experi-
iments include investigation and measurements of high vacuum systems, plasma-assisted etching and film de-
position, high temperature silicon oxidation, photo-
lithography, spin coating, chemical-mechanical pol-
ishing, and other processes. Recommended for students who have completed a satisfactory number of ad-
vanced courses with a grade-point average of 3.3 or higher may pursue original research under the direc-
tion of one of the staff. A grade of B (or better) in the first 3 units of H194 may be used to fulfill technical elective requirements in the Materials Science and Engineer-
ing program or double majors (unlike 198 and 199, which do not meet as a basis for requirements). Final report required. (F,SP) Staff

H194. Honors 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 ad-
vanced courses with a grade-point average of 3.3 or higher may pursue original research under the direc-
tion of one of the staff. A grade of B (or better) in the first 3 units of H194 may be used to fulfill technical elective requirements in the Materials Science and Engineer-
ing program or double majors (unlike 198 and 199, which do not meet as a basis for requirements). Final report required. (F,SP) Staff

195. Special Topics for Advanced Undergraduates. (1) One hour of directed group study per week. Prere-
quisites: Upper division standing and good academic standing. (2-0 G-E) Group study of special topics in materials science and engineering. Selection of topics for further study of underlying concepts and relevant literature, in consultation with appropriate fac-
ty members. (F,SP) Staff

198. Directed Group Studies for Advanced Under-
graduates. (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. Must be taken on a passed/not passed basis. Prerequisites: Consent of in-
structor and major advisor. Supervised independent study. Enrollment restrictions apply; see the Intro-
duction to Courses and Curricula section of this cata-
log. (F,SP) Staff

Graduate Courses

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 materials in undergraduate. The course tailors the nature of microstructure and its manipulation and control to determine engineering properties. Reviews bonding, structure and microstructure, the chemical, electronic and mechanical properties of mate-
rials, and introduces the student to microstructural engi-
nering. (F) Morris

201A-201B. Thermodynamics and Phase Trans-
formations 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 me-
dia, equilibrium criteria. Application to solution ther-
modynamics. Phase diagrams, solids, phase diagrams. Phase transitions, Landau rule, symmetry rules. In-
terfaces, nucleation theory, elastic effects. Kinetics: dif-
fusion of heat, mass and charge; coupled flows. (F,SP) Chrzan, Morris

202. Crystal Structure and Bonding, (3) Three hours of lecture per week. Regular, irregular arrays of points, spheres; lattices, direct, reciprocal; crystallographic point and space groups, atomic structure; bonding in molecules; bonding in solids; ionic (Pauling rules), co-
valent, metallic bonding; structure of elements, com-
ounds, minerals, polymers. (F,SP) Chrzan

204. Theory of Electron Microscopy and X-Ray Diffraction. (5) Three hours of lecture per week. Pre-
erequisites: 102, 103 or equivalent. Basic principles of techniques used in the characterization of engineering materials by electron microscopy, diffraction, and spec-
troscopy; emphasis on understanding defects respon-
sible for properties of materials. Modern electronic, optical and particle beam techniques for characteri-
ization of bulk single crystals and their crystalline and amorphous layers. Examples Hall effect, Deep Level Transient Spectroscopy, IR-Spectroscopy. (F,SP) Gronsky

205. Defects in Solids. (3) Three hours of lecture per week. Prerequisites: Physics 7C or consent of in-
structor. Many properties of solid state materials are tail the structure of crystal defects, defect formation and annihilation processes, and the influence of lattice defects on the physical and optical properties of crys-
talline materials. (F) Weber

206. Ubiquilization and Dilation 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, as-
soiated self-energy potential and externally applied stresses. Dislocation structures, core models, stacking faults, and sessile and glissile configurations. Dislocation-defect interactions and multiple dislocation patterns, dislocation-array description of grain bound-
aries, 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 elastic, plastic and viscoelastic members. Continuum mechanics: The stress and strain tensors, equilibrium and compatibility; Three-dimensional elastic, plastic and viscoelastic problems. Thermal, transfor-
mandation, and deforming stresses. Applications: Plane problems, stress concentrations at defects, metal form-
ng problems. Also listed as CIV and Environmental Engineering C231. (F) Govindjee

C212. Deformation and Fracture of Engineering Materials. (4) Three hours of lecture and one hour of discussion per week. Prerequisites: Civil Engineering 130; Engineering 150. This course covers deformation and fracture behavior of engineering materials for both monotonic and cyclic loading conditions. Also listed as Mechanical Engineering C225. (SP) Zohdi

213. Environmental Effects on Materials Properties and Behav ior. (3) Three hrs. of lecture per week. Prerequisites: MSE 112 or equivalent. Review of electro-
chemical aspects of corrosion; pitting and crevice corrosion; active/passive transition; fracture mechan-
ics. Also listed as Engineering C235. (F) Devine

C214. Micromechanics. (3) Three hours of lecture per week. Prerequisites: C211, Civil Engineering C231, or consent of instructor. Basic theories, analytical tech-
niques, and mathematical foundations of microme-
chanics. It includes 1. physical micromechanics, such as mathematical theory of dislocation, and cohesive fracture models; 2. micro-elasticity that includes Es-
soated self-energy potential and externally applied stresses; 3. theoretical composite material that main-
ains the main methodologies in evaluating overall material properties; 4. crystal plasticity and dislocation-mome-
tage theory, and the crystal plasticity; 5. homogeniza-
tion theory for materials with periodic structures. Also listed as Civil and Environmental Engineering C236. (SP) Govindjee, Li

215. Computational Materials Science. (3) Two hours of lecture and three hours of computer labora-
tory per week. Prerequisites: Graduate standing in en-
ergineering or sciences, or consent of instructor. Intro-
duction to computational materials simulation. Development of atomic scale simulations for materials science applications. Application of kinetic Monte Carlo, molecular dynamics, and total energy tech-
iques to the modeling of interatomic forces, elastic constants, ideal shear strengths, and defect properties. Introduction to simple numerical methods for solving coupled differential equations and for study-
ing correlations. (SP) Chrzan

C216. Macromolecular Science in Biotechnology. (3) Three hours of lecture per week. Prerequisites: Bioengineering 115 or equivalent; open to seniors with consent of in-
structor. Overview of the problems associated with the de-
velopment and function of polymers in biological tech-
nology and medicine. Principles of polymer science, polymer synthesis, and structure-property-performance relationships of polymers. Particular emphasis is placed on the performance 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 tissue engineering. Also listed as Bioengineering C216. (SP) Healy

C219. Diffusion: History, Physics, and Mathemat-
ics. (3) Three hours of lecture per week. Prerequisites: Graduate standing in the sciences or engineering; con-
sent of instructor. Formerly 220. Fourier's heat-dif-
fusion equation, classical solutions, applications in biological, geological, and social systems. Basic con-
cepts and equations of diffusion, observational justification and solution methods. Evolution of ideas as revealed by papers of historical significance. Heat, chemical, solid and gas diffusion, flow in porous media, and stochastic differential equations. Students to ex-
plore their individual interests in diffusion (experimental, theoretical, or historical) within a broader scientific con-
text. Also listed as Engineering C219. (SP) Narasimhan

220. Rate Phenomena in the Synthesis and Pro-
cessing of Materials. (3) Three hours of lecture per week. Prerequisites: Graduate standing in Engineer-
ing. Fluid mechanics, heat and mass transport, and chemical reaction kinetics relevant to the synthesis and processing of metals, ceramics, electronic materials and composites. (SP) Evans

221. Fuel Cells, Batteries, and Chemical Sensors: Principles, Processes, Models, and Techniques. (3) Three hours of lecture per week. Prerequisites: Engineering 115. We first consider the principles and electrode processes of electrochemical devices, chiefly fuel cells, but also battery devices. Then we discuss various transport processes in liquid, polymeric, and solid electrolytes. AC and DC analytical methods are described. We discuss various fuel cell types, the effects of fuel type on efficiency, and the choices of materials. Finally, we discuss issues of fab-
rication systems. Time permitting, we may include some laboratory experiments. (SP) DeJonghe

223. Semiconductor Materials. (3) Three hours of lecture per week. Prerequisites: Physics 7C or consent of instructor. Semiconductor purification and crystal growth techniques. Doping, radiation damage, and an-
nealing. Metal-semiconductor interfaces and reactions. Interaction between defects and impurities during pro-
cessing of devices. Major electronic and optical meth-
ods for the analysis of semiconductors. (F) Haller

224. Magnetism and Magnetic Materials. (3) Three hours of lecture per week. Prerequisites: 111 or equiv-
alent or consent of instructor; 117 recommended. This course covers the fundamentals of magnetism and magnetic materials in the first two-thirds of the class. Topics include magnetic moments in classical versus quantum mechanical pictures, diamagnetism, param-
agnetism, ferromagnetism, antiferromagnetism, crystal field environments, magnetic exchange interactions, ferromagnetism, antiferromagnet-
ism, magnetic domains, magnetic anisotropy, and magnetostiction. Magnetic materials covered include transition metals, their alloys and oxides, rare eas
C225. Thin-Film Science and Technology. (3) Three hours of lecture per week. Prerequisites: Graduate standing in engineering, physics, chemistry, or chemical engineering. Thin-film nucleation and growth, microstructural 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 Applied Science and Technology C225. (SP) Dubon, Staff

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 properties of semiconductors and basic semiconductor device physics. This technique presents the fundamental differences for photovoltaic energy conversion with respect to the physical principles of operation and design of efficient semiconductor solar cells. This course aims to equip students with the concepts and analytical skills necessary to assess the utility and viability of modern photovoltaic technologies in the context of a growing global renewable energy market. Also listed as Energy and Resources Group C226. (F.S.P) Kammen, Weber

227. Solution Processing of Materials, Devices, and Nanostructures. (3) Two and one-half hours of lecture per week. Applications-oriented treatment of the thermodynamic and kinetic principles underlying the processing of one and two-dimensional materials, devices, and nanostructures in solutions. Principles will be exemplified with model systems, with discussion of other applications. Case studies will examine how over 35 different research groups combine these principles and consider alternative novel strategies. (SP) Doyle

242. Advanced Characterization Techniques. (3) Two hours of lecture and three hours of laboratory per week. Prerequisites: 204 or 205 or consent of staff. Advanced optical, electrical, and optical-magnetic, and ion beam characterization techniques including deep level transient spectroscopy. Photo-luminescence, electron microscopy, magnetic, and Rutherford backscattering methods can be used to characterize crystalline materials (with emphasis on semi-conductors). (SP) Weber

260. Surface Properties of Materials. (3) Two and one-half hours of lecture per week. Formerly Mineral Engineering 260. Thermodynamics of surfaces and phase boundaries, surface tension of solids and liquids, surface activity, adsorption, phase equilibria, and contact angles, electrochemical double layers at interfaces, theory, and applications. (SP) Doyle

290A. Special Topics in Materials Science. (3) Three hours of lecture per week. Prerequisites: Graduation standing or consent of staff. Course topics will involve appropriate assignments on fundamental or applied topics of current interest in materials science and engineering. (F.S.P) Staff

298. Group Studies, Seminars, or Group 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.P) Staff

601. 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: Graduate standing in engineering. Individual study for the comprehensive or language requirements in consultation with the field adviser. (F.S.P) Staff

602. 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: Graduate standing in engineering. Individual study for the comprehensive or language requirements in consultation with the 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.P) 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 from the student’s faculty adviser. (F.S.P) Staff

Mathematics

Department Office: 970 Evans Hall, (510) 642-6550

University Professors

Alexandre J. Chorin, Ph.D. New York University. Applied mathematics, turbulence, 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, nonstandard analysis, probability theory.

George M. Bergman, Ph.D. University of California at Los Angeles. Associative rings, universal algebra and category theory, counterexamples.


Michael C. Freedman, Ph.D. University of California at Santa Barbara. Topology, nonclassification.

James W. Demmel, Ph.D. University of California, Berkeley. Numerical analysis, high performance computing.

David Eisenbud, Ph.D. University of Chicago. Commutative algebra, algebraic geometry, computational algebra.

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.

Edward Frenkel, Ph.D. Harvard University. Representation theory, integrable systems, mathematical physics?

Alexander Givental, Ph.D. Moscow State University. Symplectic geometry, singularity theory, mathematical physics.

F. Alberto Grünbaum, Ph.D. Rockefeller University. Analysis, probability, mathematical physics.

Mark Haiman, Ph.D. Massachusetts Institute of Technology. Algebra, combinatorics.


Dennis H. Hannings, Ph.D. University of Washington. Dynamical systems, integrable systems.


William M. Kahan, Ph.D. University of Toronto. Error analysis, numerical computations, computers, computer science, large matrices, trajectory problems.

Robbin C. Kirby, Ph.D. University of Chicago. Topology of manifolds.

Michael J. Klass, Ph.D. University of California at Los Angeles. Probability, statistics.

Tsui-Yuen Lam, Ph.D. Columbia University. Algebra.


Arthur E. Ogus, Ph.D. Harvard University. Algebraic geometry.

Peter Oszváth, Ph.D. Harvard University. topology and gauge theory.

Yulai Perez, Ph.D. Hebrew University. Probability theory and Hausdorff dimension.

James Pitman, Ph.D. Sheffield University. Probability and stochastic processes.

Bjorn Poonen, Ph.D. University of California, Berkeley. Number theory, algebraic geometry.

Marina Ratner, Ph.D. Moscow State University. Ergodic theory.

Nicolai Reshetikhin, Ph.D. Steklov Institute. Mathematical physics, quantum algebra.


Kenneth A. Ribet, Ph.D. Harvard University. Number theory, algebraic geometry.

Alexei Poltoratski, Ph.D. California number theory, algebraic geometry.

Daniel Shanks, Ph.D. Stanford University. Number theory, cryptography.

William V. Stadler, Ph.D. University of Virginia, Charlottesville. Numerical analysis, matrix theory.


Jeffrey C. Lagarias, Ph.D. University of Michigan. Mathematics, computer science.

Jerrold E. Marsden, Ph.D. University of California at Berkeley. Mechanics, applied dynamics, control theory.

†Recipient of Distinguished Teaching Award


### 342 / Mathematics

Robert M. Solovay, Ph.D. University of Colorado. Logic, universal algebra.

C. Keith Miller (Emeritus), Ph.D. Rice University. Partial differential equations, numerical methods for PDEs.

Cai Heng (Emeritus), Ph.D. Harvard University. Representation theory, automorphic forms, operator algebras.

Andrew W. Odlyzko (Emeritus), Ph.D. Harvard University. Number theory, elliptic curves, modular forms.

Berk Endo (Emeritus), Ph.D. Stanford University. Numerical analysis, scientific computation.

Murray Harris (Emeritus), Ph.D. Brown University. Partial differential equations.

Charles J. Pugh (Emeritus), Ph.D. Johns Hopkins University. Functional analysis.


Rainer K. Sachs (Emeritus), Ph.D. Syracuse University. Relativity, mathematical biology.

Ichiro Satake (Emeritus), Ph.D. University of Tokyo. Symmetric spaces, automorphic functions.

Isadore M. Singer (Emeritus), Ph.D. University of Chicago. Nuclear and quantum field theory.

Paul Concus, Ph.D. Harvard University. Fluid dynamics, applied mathematics. Detailed information concerning admissions and financial aid is available. Students planning majors in mathematics, 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)

### Lower Division Courses

**1A. Calculus.** (4) Students will receive no 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: Three years of high school mathematics, including trigonometry and analytic geometry, or a satisfactory grade in one of the following: CEEB MAT test, an AP test, the UC/CSU math diagnostic test, or 32. Consult the mathematics department for details. Students with AP credit should consider choosing a course more advanced than this. This sequence 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.** (4) 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 sequences and series. First-order ordinary differential equations. Second-order ordinary differential equations; oscillation and damping; series solutions of ordinary differential equations. (F,SP)

**16A. Analytic Geometry and Calculus.** (3) Students will receive no credit for 16A after taking 1A. Two hours of lecture and one hour of discussion/workshop per week; at the discretion of the instructor, an additional hour of discussion/workshop or computer laboratory per week. Prerequisites: Three years of high school mathematics, including trigonometry, plus a satisfactory grade in one of the following: CEEB MAT test, an AP test, the UC/CSU math diagnostic exam, or 32. Consult the mathematics department for details. This sequence is intended for majors in the life and social sciences. Calculus of one variable; derivatives, definite integrals and applications, maxima and minima, and applications of the exponential and logarithmic functions. (F,SP)

**16B. Analytic Geometry and Calculus.** (3) Students will receive no credit for 16B after 1B, 2 units after 1A. Two hours of lecture and one hour of discussion/workshop per week; at the discretion of the instructor, an additional hour of discussion/workshop or computer laboratory per week. Prerequisites: 16A. Continuation of 16A. Applications of integration; 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 pass/fail 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
32. Precalculus. (4) Students will receive no credit for 32 after taking 1A-1B or 16A-16B and will receive 3 units after taking 56. Two hours of lecture and two hours of discussion/workshop per week, plus, at the instructor’s option, an extra hour of lecture/discussion per week. Prerequisites: Three years of high school mathematics, plus satisfactory score on one of the following: CEEB MAT test, math SAT, or UC/CSU diagnostic examination. Polynomial and rational functions, exponential and logarithmic functions, trigonometry and trigonometric functions. Complex numbers, fundamental theorems of algebra, mathematical induction, binomial theorem, series, and sequences. (F,SP)

33. Multivariable Calculus. (4) Students will receive 1 unit of credit for 53 after taking 50B and 3 units 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 curves, vector spaces, parametric equations and polar coordinates, vectors in 2- and 3-dimensional Euclidean spaces. Partial derivatives. Multiple integrals. Vector calculus. Theorems of Green, Gauss, and Stokes. (F,SP)

53M. Multivariable Calculus with Computers. (4) Students will receive no credit for 53M after taking 53A, 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 Euclidean spaces, 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. Vector spaces; inner product spaces. Eigenvalues and eigenvectors; linear transformations. Homogeneous ordinary differential equations; first-order differential equations with constant coefficients. Fourier series and partial differential equations. (F,SP)

54M. Linear Algebra and Differential Equations with Computers. (4) Students will receive no credit for 54M after taking 54, 1 unit after 50A, and 3 units after 50B. 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 54: basic linear algebra; matrix arithmetic and determinants. Vector spaces, inner product spaces. Eigenvalues and eigenvectors. Linear transformations. Homogeneous ordinary differential equations; first-order differential equations with constant coefficients. Fourier series and partial differential equations. No prior computer experience is necessary. (F,SP)

55. Discrete Mathematics. (4) Students will receive no credit for 55 after taking 55A. 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: Math 54 or an equivalent linear algebra course. 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

70. Theory of Functions of a Real Variable. (4) This course will cover the same topics as 50: real number system, sequences, limits, and continuous functions in R. Uniform convergence, interchange of limit operations, Infinite series. Mean value theorem and applications. The Riemann integral. (F,SP)

70H. Honors Theory of Functions of a Real Variable. (4) Three hours of lecture per week. Prerequisites: 50 and Math 150A. This course will cover the same topics as 50: real number system, sequences, limits, and continuous functions in R. Uniform convergence, interchange of limit operations, Infinite series. Mean value theorem and applications. The Riemann integral. (F,SP) Staff

100. 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

110. Linear Algebra. (4) No credit allowed after completion of Math 112 or 113B. Three hours of lecture per week. Prerequisites: 54 or a course with equivalent linear algebra content. No prior computer experience is necessary. (F,SP)

113. Introduction to Abstract Algebra. (3) Three hours of lecture per week. Prerequisites: 54 or a course with equivalent linear algebra content. Sets and relations. The integers, congruences and the Fundamentals 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)

115. Introduction to Number Theory. (3) Three hours of lecture per week. Prerequisites: 53 and 54. Divisibility, congruences, numerical functions, theory of quadratic residues. Topics selected: Continued fractions, partitions, quadratic fields, asymptotic distributions, additive problems. (F,SP)

116. Waves and Signal Processing. (3) Three hours of lecture per week. Prerequisites: 53 and 54. Introduction to signal processing including Fourier analysis and wavelets. Theorems and applications to one-dimensional signals and multidimensional images. (F,SP)

121A-121B. Mathematical Tools for the Physical Sciences. (4) Three hours of lecture per week. Prerequisites: 53 and 54. Fundamental mathematical ideas and techniques for the sciences, Fourier series, finite-dimensional linear systems, Infinite-dimensional linear systems, orthogonal expansions, special functions, partial differential equations and their solutions. This course will cover the same topics as 53: parametric equations and polar coordinates, vectors in 2- and 3-dimensional Euclidean spaces, partial derivatives, multiple integrals, vector calculus. Theorems of Green, Gauss, and Stokes. (F,SP)

125A. Mathematical Logic. (4) Three hours of lecture per week. Prerequisites: 104 or consent of instructor. Further topics on computability and model theory. Topics selected: Turing machines, diagonalization, arithmetical hierarchy, incompleteness theorems, induction, Gentzen’s theorem. (F,SP) Staff

128. Mathematical Logic. (4) Three hours of lecture per week. Prerequisites: 104 or consent of instructor. Further topics on computability and model theory. Topics selected: Turing machines, diagonalization, arithmetical hierarchy, incompleteness theorems, induction, Gentzen’s theorem. (F,SP) Staff
127. Mathematical and Computational Methods in Molecular Biology. (4) Three hours of lecture per week. Prerequisites: 53, 54, and 55; Statistics 20 recommended. Introduction to mathematical and computational methods 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)

128A. 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: 53 and 54. Programming for numerical calculations, round-off error, approximation, interpolation, numerical quadrature, and solution of ordinary differential equations. Practice on the computer. (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)

130. The Classical Geometries. (4) Three hours of lecture per week. Prerequisites: 110 and 110B. Critical examination of Euclid’s Elements; ruler and compass constructions; connections with Galois theory; Hilbert’s axioms for geometry, theory of areas, introduction of Euclidean solid 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 or 121B. Frenet formulas, isoperimetric inequality, local theory of surfaces in Euclidean space, first and second fundamental forms. Gaussian and mean curvature, isometries, geodesics, parallelism, the Gauss-Bonnet-Von Dyck Theorem. (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. (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)

160. History of Mathematics. (4) Three hours of lecture per week. Prerequisites: 53, 54, and 112. 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, asymptotic methods, combinatorics of permutations and partitions, designs and codes. Additional topics at the discretion of the instructor. (F,SP) Staff

185. Introduction to Complex Analysis. (4) Three hours of lecture 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)

H185. 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: 110, 113, and 185. Course gives a comprehensive view of analysis. Emphasis is on the interrelations among topics taken from differential equations, harmonic analysis and group representation, elementary functional analysis and special functions. (SP)

191. Experimental Courses in Mathematics. (1-4) Must have completed 60 units and be in good standing. May be taken under the discretion of the instructor. (F,SP)


204A-204B. Ordinary and Partial Differential Equations. (4) Three hours of lecture per week. Prerequisites: 185. Normal families, Riemann Mapping Theorem. Picard theorem and boundary value problems. Multiple-valued analytic functions and Riemann surfaces. Further topics selected by the instructor may include: harmonic functions, elliptic and algebraic functions, boundary behavior of analytic functions and HP spaces, the Riemann zeta functions, prime number theory. (SP)


280. C*-algebras. (4) Three hours of lecture per week. Prerequisites: 206. Basic theory of C*-algebras. Positivity, spectrum, GNS construction. Group C*-algebras and connection with group representations. Additional topics, for example, C*-dynamical systems, K-theory. (SP)

290. Von Neumann Algebras. (4) Three hours of lecture per week. Prerequisites: 206. Basic theory of von Neumann algebras. Density theorems, topologies and normal maps, traces, comparison of projections, type classifications, examples of factors. Stone’s Theorem, examples of trace-preserving actions, for example, Tomita Takasaki theory, subfactors, group actions, and noncommutative probability. (SP)

212. Several Complex Variables. (4) Three hours of lecture per week. Prerequisites: 185 and 202A-202B or their equivalents. Power series developments, domains 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.
214. Differentiable Manifolds. (4) Three hours of lecture per week. Prerequisites: 202A. Smooth manifolds and maps, tangent and normal bundles. Sard’s theorem and transversality, Whitney embedding theorem. Basic degree theory. Flows, Lie derivative, Lie groups and algebras. Additional topics selected by instructor. (F,SP)

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 cohomotopy theories and topics from spectral sequences, cohomology operations, and characteristic classes. Sequence begins fall.


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 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 Statistics C205B. (SP)

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 or 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 and 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 202B; 165. The theory of initial value and boundary value problems for hyperbolic, parabolic, and elliptic partial differential equations, with emphasis on non-linear problems and types of equations and systems of equations. Sequence begins fall.

224A-224B. Mathematical Methods for the Physical Sciences. (4,4) Three hours of lecture per week. Prerequisites: Graduate status or consent of instructor. Introduction to the theory of distributions. Fourier and Laplace transforms. Partial differential equations. Green’s function. Operator theory, with applications to eigenfunction expansions, perturbation theory and linear and non-linear waves. Sequence begins fall. (F,SP)


226A. Abstract Machines and Languages. (4) Three hours of lecture per week. Prerequisites: 135; 113 or 110. Finite state automata, regular sets, Turing machines, recursive functions, decision problems. Context-free languages, pushdown automata, ambiguity, special families of languages, power series in non-commuting variables.

227A. Theory of Recursive Functions. (4) Three hours of lecture per week. Prerequisites: 222B. Recursive and recursively enumerable sets of natural numbers, properties, significance and classification. Relativization, degrees of unsolvability. The recursion theorem. 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 the theorems of Myers, Synge, and Cartan-Hadamard, 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 theorem of 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. Basic topics: symplectic linear algebra, symplectic manifolds, Darboux theorem, cotangent bundles, variational problems and Lengendre transform, Hamiltonian systems, Poisson brackets, symmetry 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. Structure theory of groups, rings, fields and their homomorphisms. Classes of structures determined by identities. Constructions such as free objects, objects presented by generators and relations via the category of free objects. Applications to geometric algebra, modules, general results to groups, rings, lattices, etc. Course may emphasize study of congruence-and subalgebra-lattices, or category-theory and adjoint functors, or other aspects. (SP)

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, polyhedral combinatorics, and other topics. 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: Consent of instructor. Group theory, including the Jordan-Holder theorem and the Sylow theorems. Basic theory of rings and their ideals. Unique factorization domains and principal ideal domains. Modules. Fields. Related topics such as 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, applications to 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) Three hours of lecture per week. Prerequisites: 250A. 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, 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, projective 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. Affine and projective algebraic varieties. Theory of schemes and morphisms of schemes. Smoothness and differentials in algebraic geometry. Coherent sheaves and their cohomology. Riemann-Roch theorem and selected applications. 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, finite Chevalley groups, 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, convergence and summability, 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, Pontryagin duality, and structure theory of locally compact abelian groups, Peter-Weyl theorem for compact groups. Further topics may include inner study of harmonic analysis on commutative groups, or else head in the direction of group

B prefix=language course for business majors
C prefix=cross-listed course
H prefix=honors course
R prefix=course satisfies R&Q requirement
AC suffix=course satisfies American cultures requirement
*Professor of the Graduate School
†Recipient of Distinguished Teaching Award
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 familiar ity with algebraic topology. Approximations, degree 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, embeddings, singularities of maps.

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. (F,SP)

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. Must be taken on a satisfactory/unsatisfactory basis. Prerequisites: For qualified graduate students. 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. Course does not satisfy unit or residence requirements for doctoral degree. (F,SP) Staff

Professional Courses

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 students teaching for the first time in the department. The course consists of practice teaching, alternative teaching strategies, group and self-analysis of videotapes, reciprocal class visits, and an individual project. (F,SP)

301. Undergraduate Mathematics Instruction. (1-2) Course may be repeated once for credit. Three hours of seminar and four hours of tutorial per week. Must be taken for one unit by special permission of instructor. Must be taken on a satisfactory/unsatisfactory basis. (F,SP)

Mechanical Engineering (College of Engineering)

Department Office: 6141 Etcheverry Hall, (510) 643-7013 http://www.me.berkeley.edu/
Chair: Albert Pisano, Ph.D.

Professors

Alex M. Argyris (Roccase and Elizabeth Hughes Chair in Mechanical Engineering), Ph.D. Stanford University. Decision and expert systems

Jude M. Auslander (Associate Dean, Research and Student Affairs), Sc.D. Massachusetts Institute of Technology. Dynamics and control systems, stability

Stanley A. Berger, Ph.D. Brown University. Fluid mechanics

Bogdan B. Boyko (William S. Floyd, Jr., Distinguished Professor in Engineering), Ph.D. Brown University. Elasticity, plasticity, computer mechanics

Van P. Carey, Ph.D. State University of New York Buffalo. Transport in multiphase systems, thermophysics of phase-change processes

James Casey, Ph.D. University of California, Berkeley. Continuum mechanics

Jin-Yuan Chen, Ph.D. Cornell University. Turbine combustion, chemical kinetics, numerical simulation

Hari Dharan, Ph.D. University of California, Berkeley. Combustion, gas dynamics

Robert W. Dibble, Ph.D. University of Wisconsin. Combustion, gas dynamics

David A. Dorrfield (Associate Dean, Interdisciplinary Studies), Ph.D. University of Wisconsin. Manufacturing processes, robotics

Carlos Fernandez-Pello (Associate Dean, Graduate Division), Ph.D. University of California, San Diego. Combustion, heavy and condensed fuels

Michael Y. Frenklach, Ph.D. University. Chemical kinetics, combustion chemistry, chemical vapor deposition

Ralph Greif, Ph.D. Harvard University. Heat and mass transfer

Costas Grigoriou, Ph.D. University California. Heat transfer, laser, materials processing, robotics

J. Karl Hedrick (James Marshall Wells Chair in Mechanical Engineering), Ph.D. University of California, San Diego. Automatic control systems, transport systems

Roberto Horowitz, Ph.D. University of California, Berkeley. Automatic control systems, design

Robert T. Howe, Ph.D. University of California, Berkeley. Robotics

George C. Johnson (Associate Dean, Special Programs), Ph.D. Stanford University. Ultrasound stress evaluation

Homayoun Kazerouni, D.Sc. Massachusetts Institute of Technology. Mechanotronics, robotics

Tony Keaveny, Ph.D. Cornell University. Tissue engineering and biomechanics

Kyriakos Kourkoulou, Ph.D. Massachusetts Institute of Technology. Tribology, contact mechanics, mechanical behavior of materials

*Geoffrey Leimann, Ph.D.

E. T. Liem (Lester John Lloyd and Lynne Dewart Lloyd Distinguished Professor), Ph.D. University of California, San Diego. Classical fluid dynamics

Key Liu, Ph.D. University of California, Berkeley. High-speed electromagnetic devices

Liewei Lin, Ph.D. University of California, Berkeley. NSF-funded research project

Fai Ma, Ph.D. California Institute of Technology. Vibration and control

Anur M. Majumdar, Ph.D. University of California, Berkeley. Nanoscale thermal and biophysical engineering, microsystems

A. Alaa Mansour, Ph.D. University of California, Berkeley. Structural reliability and safety, probabilistic mechanics of marine structures, shock and strike structures, development of design criteria

Philip Marcus, Ph.D. Princeton University. Computational fluid dynamics

T. O. Oden, Ph.D. Cornell University. Nonlinear dynamics with applications to continuum mechanics

Anne MacKerell, Ph.D. University of California, Berkeley. Automatic control systems, mechanical systems

Parajayota Pugapobuphol, Ph.D. University of California, Berkeley. Computational mechanics, solid mechanics

Albert P. Pisano (Chair and FANUC Chair for Mechanical Systems), Ph.D. Columbia University. Computer-aided design, design optimization

Hameshwar Pratola (Vice Chair, Graduate Study), Ph.D. University of Florida at Gainesville. Dynamic systems, automatic control

Lisa A. Pruitt, Ph.D. Brown University. Tissue biomechanics, biomaterial science

Boris Ratusny (Arnold and Barbara Silverman Distinguished Professor in Bioengineering), Ph.D. Massachusetts Institute of Technology. Heat, mass transfer, cryopreservation

Omar Savas, Ph.D. California Institute of Technology. Aerodynamics, boundary layers, combustion, rotating flows, turbulence

*Robert F. Sawyer (Class of ’35 Professor of Engineering, of Princeton University. Combustion, fossil and synthetic fuel engines

Andrew J. Szen, Ph.D. Cornell University. Fluid dynamics

Masayoshi Tomizuka (Cheryn and John Neerhout, Jr., Distinguished Professor), Ph.D. Massachusetts Institute of Technology. Automatic control systems, manufacturing and control systems

Benson Tongue, Ph.D. Princeton University. Chaotic oscillations in dynamic systems

Kurt S. Udell (Vice Chair, Undergraduate Program), Ph.D. University of Utah. Heat transfer, environmental remediation, engineering ethics

Paul K. Wright (Associate Dean, Distance Learning and Instructional Technology, Co-Director of Technology Program and A. Martin Berlin Professor of Mechanical Engineering), Ph.D. University of Birmingham. Manufacturing processes, automation

Ronald W. Yersin, Ph.D. University of California, Berkeley. Hydromechanics, numerical modeling, surface waves, ocean engineering

Cyni P. Atkinson, M.S., M.E. (Emeritus)

I. M. Crocombe (Emeritus)

Don M. Cunningham, M.S. (Emeritus)

Ian Finnie, D.Sc., D. (The Fire Professor Emeritus)

Joseph Frisch, M.S. (Emeritus)

Frank E. Hauser, Ph.D. (Emeritus)

Maurice Holt, Ph.D. (Emeritus)

Chieh S. Hsu, Ph.D. (Emeritus)

Franklin C. Huribut, Ph.D. (Emeritus)

Clayton D. Mote, Jr., Ph.D. (FANUC Professor of Mechanical Systems Emeritus)

Anton K. Koppelman, Ph.D. D. Sc. (Emeritus)

Patrick J. Magri, Ph.D. (Emeritus)

Charles W. Radcliffe, M.S., M.E. (Emeritus)

Samuel A. Schaaf, Ph.D. (Emeritus)

Frederick S. Sherman, Ph.D. (Emeritus)

Erich G. Thomson, Ph.D. (Emeritus)

George J. Trezek, Ph.D. (Emeritus)

Associate Professors

Stephen Morris, Ph.D. Johns Hopkins University. Geophysical fluid dynamics

David J. Steigmann, Ph.D. Brown University. Continuum mechanics, solid mechanics, nonlinear solid mechanics, electrodynamics

Xiang Zhang, Ph.D. University of California, Berkeley. Nanofabrication and processing in mechanical engineering

Xiaobing Tang, Ph.D. University of California, Berkeley. Tribology, contact mechanics, mechanical behavior of materials

Tarek I. Zaid, Habilitation Degree, University of Hannover, Germany. Ph.D. University of Texas at Austin. Computational mechanics

Assistant Professors

Sara McMains, Ph.D. University of California, Berkeley. Chemical engineering, micromachining

Lydia L. Sohn, Ph.D. Harvard University. Integrated microfluidic devices for biological sensing

Adjunct Professor

Klaus Weinmann, Ph.D.
Overview

Mechanical engineers contribute to society by solving problems in transportation, energy, the environment, and human health. The mechanical engineering curriculum needs a thorough preparation in mathematics, physics, chemistry, and 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 areas of mechanical engineering.

The undergraduate program begins at the freshman level with study in the humanities, mathematics, basic 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, electro-mechanical systems analysis, energy conversion, fluid mechanics, heat and mass transfer, manufacturing, materials processing, mechanical design, ocean engineering, nuclear engineering, thermodynamics, biomedical, and environmental engineering.

Because of the widening range of technical problems and the limited amount of specialization available in the undergraduate curriculum, qualified students may elect to enroll in an accelerated graduate study program 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. The department also makes available a brochure detailing the undergraduate and graduate programs in mechanical engineering.

The B.S. program is accredited in mechanical engineering by the Accreditation Commission of the Accreditation Board for Engineering and Technology, 111 Market Place, 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 1C, 1X, 117, 118, 119
- Computer Sciences 100; Civil Engineering 130, 150, 177; Mechanical Engineering 130, 175

**Upper Division**
- Mechanical Engineering 102B, 104, 105 or 105B, 106, 107A-107B, 109, 124; Engineering 190; Electrical Engineering and Computer Sciences 100; Civil Engineering 190.

**Note:** All students must complete a (a) six courses (five for double major students) of at least 3 units each in technical and social studies selected from an approved list of courses (please see the "Humanities and Social Studies" section of the Announcement of the College of Engineering); (b) 12 units of Technical electives. No more than one lower elective mechanical engineering courses or upper division engineering courses taught by mechanical engineering faculty. Of these, 3 units must be in an elective course selected from the following list: ME 101, 110, 119, 128, 130, 135, 142, 145, 161, 165. The other technical elective units can be chosen from courses in engineering, physical sciences, mathematics, or technical electives, and must be chosen after consultation with an advisor.

**Graduate Programs**

Both master’s and doctoral programs are available. The student may choose either a thesis emphasis in particular areas or integrated studies directed to professional objectives. Master of Science and Ph.D. degrees are the relevant degrees for the Bachelor of Engineering and D.Eng. degrees for the professional one. Specialization is offered in the following mechanical engineering disciplines: (1) controls and dynamics, (2) design, (3) fluids, (4) mechanics and materials, and (5) thermal sciences. Specialization is also offered in the following focus areas: (1) bioengineering, (2) manufacturing, (3) microelectromechanical systems (MEMS) and nanotechnology, (4) computation, (5) mechatronics, (6) environmental design, (7) mechatronics and materials, and (8) ocean engineering. Details on various aspects of graduate study are available at http://www.me.berkeley.edu, from departmental brochures, and from 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 the catalog: 28, Graduate Introduction to Engineering; 117, Methods of Engineering Analysis; 118, Introduction to Scientific Computing; 128, Advanced Engineering Design Graphics; 153, Introduction to 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.

**Mechanical Engineering**

**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 pass/failed 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. Enrollments are offered in all campus departments, and topics vary 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 seminar per semester. 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 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 in the crucial second year. The topics vary from department to department and semester to semester. Enrollment limited to 15 sophomores. (F,SP) Staff

- **92. Introduction to Mechanical Engineering.** (1) One hour of lecture per week. Must be taken on a pass/failed basis. Introduction to the field of mechanical engineering designed to acquaint the entering student with the profession and the activities of the Department. (F) Staff

- **96. Supervised Independent Group Studies.** (1-4) Course may be repeated for credit. Hours to be arranged. Must be taken on a passed/not passed 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

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**Professor of the Graduate School**

**Recipient of Distinguished Teaching Award**

| B prefix=language course for business majors |
| C prefix=course satisfies R&K requirement |
| R prefix=course satisfies R&K requirement |
| AC prefix=course satisfies American cultures requirement |

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**Mechanical Engineering / 347**
Upper Division Courses

101. High Mix/Low Volume Manufacturing. (3) Three hours of lecture and one hour of discussion per week. Prerequisites: C124 or consent of instructor. Fundamentals of high mix/low volume (HMLV) manufacturing systems including manufacturing fundamentals, unit operations and manufacturing economics. Students will 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/case studies for design of competitive manufacturing systems. (F) Dornfeld, McManis

508. Mechanical Engineering Design. (3) Two hours of lecture and three hours of laboratory per week. Prerequisites: C124 and Engineering 28. Application of principles of mechanics, material science, and manufacturing to design problems. Synthesis and components of complete machines that must meet prescribed functional requirements. Synthesis and analysis of a major machine design project. (F,SP) Staff

102A. Mechanical Behavior of Engineering Materials. (3) Three hours of lecture and one hour of discussion per week. Prerequisites: C105B. Mechanical Engineering Design. (3) Three hours of lecture and one hour of discussion per week. Prerequisites: Biology 1A, Engineering 45, and Civil Engineering 130. This course covers the mechanical and structural aspects of biological tissues and their relationship to the design of prosthesis and orthopedic implants. Natural and synthetic load-bearing biomaterials for medical and clinical applications are reviewed. Bio-compatibility of biomaterials and host response to foreign materials are examined. Quantitative treatment of biomechanical issues and constitutive relationships of tissues and biomaterials are covered. Material selection for load-bearing applications including reconstructive surgery, orthopedics, dentistry, and cardiology. Mechanical design for longevity including topics of fatigue, wear, and fracture. Use of bioresorbable implants and hybrid materials. Directions in tissue engineering. Also listed as Bioengineering C117. (SP) Pratt

107A. Thermodynamics. (3) Students will receive no credit for 105 after taking 105B. Three hours of lecture and one hour of discussion per week. Prerequisites: C124 or consent of instructor. Application of the first and second laws of thermodynamics 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 105 after taking 105B. Three hours of lecture and one hour of discussion per week. Prerequisites: C124 or consent of instructor. Application of the first and second laws of thermodynamics 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

107B. 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: C124 or consent of instructor. Application of the first and second laws of thermodynamics 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

C105B. 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: C124 or consent of instructor. Application of the first and second laws of thermodynamics 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

106. Fluid Mechanics. (3) Three hours of lecture and one hour of discussion per week. Prerequisites: C104. This course introduces the fundamentals and techniques of fluid mechanics with an emphasis on design 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, and Laboratory 101. Emphasis is on the theory, 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: 107A. Experimental investigation of engineering systems and of phenomena of interest to mechanical engineers. Design and conduct of experiments. Analysis of data and reporting of experimental results. (F,SP) Staff

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 to molecular level 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 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. (F,SP) Staff

111. Structural Aspects of Biomaterials. (3) Three hours of lecture and one hour of discussion per week. Prerequisites: Biology 1A, Engineering 45, and Civil Engineering 130. This course covers the mechanical and structural aspects of biological tissues and their relationship to the design of prostheses and orthopedic implants. Natural and synthetic load-bearing biomaterials for medical and clinical applications are reviewed. Biocompatibility of biomaterials and host response to foreign materials are examined. Quantitative treatment of biomechanical issues and constitutive relationships of tissues and biomaterials are covered. Material selection for load-bearing applications including reconstructive surgery, orthopedics, dentistry, and cardiology. Mechanical design for longevity including topics of fatigue, wear, and fracture. Use of bioresorbable implants and hybrid materials. Directions in tissue engineering. Also listed as Bioengineering C117. (SP) Pratt

118. Introduction to Nanotechnology and Nanoscience. (3) Three hours of lecture per week. Prerequisites: Chemistry 1A and Physics 7B. This course introduces engineering students to the field of nanotechnology and nanoscience. The course has two components: (1) Formal lectures. Students receive a set of formal lectures introducing them to the field of nanotechnology and nanoscience. The material covered includes nanofabrication technology (how one achieves the nanometer length scale, from “bottom up” to “top down” technologies), the interdisciplinary nature of nanotechnology and nanoscience (including areas of science, engineering, medicine, physics, and molecular biology), examples of nanoscience phenomena (the crossover from bulk to quantum mechanical 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) Systems. (3) Three hours of lecture per week. Prerequisites: Electrical Engineering 100, Physics 7B. Fundamentals of microelectromechanical systems including design, fabrication of microstructures; surface micromachining, bulk micromachining, building blocks, and micromachines; introduction to MEMS devices; high-aspect-ratio microstructures; scaling issues in the design of MEMS (heat transfer, fluid mechanics and solid mechanics); device design, analysis, and mask layout. (F) Staff

122. Processing of Materials in Manufacturing. (3) Three hours of lecture and one hour of discussion per week. Prerequisites: C124; Engineering 130. Fundamentals of manufacturing processes (metal forming, metal cutting, welding, joining, and casting); selection of metals, plastics and other materials relative to the design and choice of manufacturing processes. (SP) Wang

123. Microfabrication Equipment Laboratory. (2) One hour of lecture and one hour of laboratory per week. Prerequisites: Electrical Engineering 40 or 100, Mathematics 53 and 54, Physics 7B; an upper division course on microfabrication technology or manufacturing technology is recommended. Staff

130. Design of Planar Machinery. (3) Three hours of lecture and one hour of laboratory per week. Prerequisites: 102B, Laboratory 101. Synthesis, analysis, and design of planar machines. Kinematic synthesis of planar linkages and, ideal, and numerical analysis and synthesis. Linkages, cams, reciprocating engines, gear trains, and flywheels. (SP) Yousef


133. Mechanical Vibrations. (3) Three hours of lecture per week. Prerequisites: 104. An introduction to the theory of mechanical vibrations including topics of harmonic motion, resonance, transient and random excitation, applications of Fourier analysis and convolution methods. Multidegree of freedom discrete systems including principal mode, principal coordinates and Rayleigh’s principle. (SP) Tongue

134. Automatic Control Systems. (4) Three hours of lecture and one hour of discussion per week. Three hours of laboratory every other week. Prerequisites: 102A or Materials Science and Engineering 113. Three hours of lecture and one hour of discussion per week. Prerequisites: Civil Engineering 130 and Engineering 45; formerly 102A and Materials Science and Engineering 113. This course covers elastic and plastic deformation under static and dynamic loads. Prediction and prevention of failure by yielding, fracture, fatigue, wear, and environmental factors are addressed. Design issues pertaining to materials selection for load-bearing applications are discussed. Case studies of engineering failures are presented. Topics include 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 failure, analysis and applications of high performance composites. Examples of mixtures. Stress, strain transformations. Elastic properties of a single orthotropic ply. Laminated plate theory. Failure criteria. Design of composite structures and components. Manufacturing processes. (F) Dhanar

207. Computer-Aided Mechanical Design. (3) Three hours of lecture and one hour of discussion per week. Prerequisites: 1062 Engineering, Staff

142. Thermal Environmental Control. (3) Three hours of lecture per week. Prerequisites: 105 or equivalent; 106, 109 (may be taken concurrently). Fundamentals of combustion, flame structure, flame speed, flammability, ignition, stirred reaction, kinetics and nonequilibrium processes, pollutant formation. Application to engines, energy production and fire safety. (F) Fernandez-Pello

145. Computer-Aided Thermal Design. (3) Three hours of lecture and one hour of discussion per week. Prerequisites: 105 and 106. Staff

210. Biological Control Systems. (3) One and one-half hours of lecture and three hours of laboratory per week. Prerequisites: 105, 106, 109 or consent of instructor. Formerly Engineering 164. Terminology and definition of hull forms, conditions of static equilibrium and stability of floating submerged bodies. Effects of damage on stability. Structural loads and response. Box girder theory. Isotropic and orthotropic plate bending and buckling. Water, wave theory, also listed as Civil Engineering 164, (F) Mansour

C165. Environmental Engineering. (3) Three hours of lecture and one hour of laboratory per week. Prerequisites: 106, Civil Engineering 100, or consent of instructor. Ocean environment. Physical properties and characteristics of the oceans. Global conservation laws. Surface-wave generation, C164. (F) Mansour

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 to the finite element method and is intended for seniors in engineering 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 global arrays, and solution of the resulting algebraic systems. Finite element formulations for several important field equations are introduced using the finite element approach. Particular emphasis is placed on computer simulation and analysis of realistic engineering problems from solid and fluid mechanics, heat transfer, and electromagnetic theory. The course uses a multi-physics MATLAB-based finite element program that possesses 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 finite element model construction and analysis. Also listed as Civil and Environmental Engineering C133. (SP) Staff

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 one of the members of the staff. May not be taken concurrently with any other course. Technical elective requirements in the Mechanical Engineering program (unlike 198 or 199, which do not specify technical elective requirements). (F,SP) Staff

198. Directed Group Studies for Advanced Undergraduates. (1-4) Course may be repeated for credit. One to four hours of directed group study per week. Must be taken on a pass/grade basis. Prerequisites: Upper division standing and good academic standing. Group study of a selected topic or topics in Mechanical Engineering. Credit for 198 or 199 cannot be applied to twice the time allotted for a single section. Staff

199. Supervised Independent Study. (1-4) Course may be repeated for credit. Individual conferences. Must be taken on a pass/grade 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

210. Biological Control Systems. (3) One and one-half hours of lecture and three hours of laboratory per week. Prerequisites: Graduate standing or permission of instructor. Engineering analysis, especially applications to modern control of complex biological systems; dynamical engineering analysis of anatomical-physiological elements. Experimental methods applied to biological control systems in the laboratory and computer simulations on the digital computer. Basic knowledge of general and on-line digital computers. Digital simulation to interpret experimental data and to elucidate design features of these living systems. (F) Staff

C212. Heat and Mass Transport in Biomedical Engineering. (3) Three hours of lecture per week. Prerequisites: C105, C106. Formerly Mechanical Engineering 212. 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
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 periastatic 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 functions, e.g. blood oxygenators, kidney dialysis 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 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 mechanical topics will be introduced, including anisotropic elasticity and failure, cellular solid theory, biochip theory, and quasi-linear viscoelasticity (QLY) theory. Building from this theoretical basis, we will explore the constitutive behavior of a wide variety of biological tissues. After taking this course, students should have sufficient background knowledge of the mechanical behavior of most biological tissues. Formal discussion section will include a seminar series with external speakers. Also listed as Bioengineering C214. (SP) Staff

C216. 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, design, and fabrication of micro-electromechanical systems (MEMS). Micro- and nano-fabrication processes, including silicon surface and bulk micromachining and non-silicon micromachining. Integration strategies and process flows. Microelectromechanical machines: electronic, piezoelectric, piezoelectric, thermal, magnetic transduction. Electronic position-sensing circuits and mechanical and electrical noise. CAD for MEMS. Design project is required. Also listed as Electrical Engineering C245. (F) Staff

C217. Mechanical Behavior of Composite Materials. (SP) Pisano

220. Precision Manufacturing. (3) Three hours of lecture per week. Prerequisites: 101, 102B, or consent of instructor. Engineering and the design of 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 (di- amond turning and abrasive (fixed and free) processes), sensors for process monitoring and control, metrology, actuators, machine design case studies and examples of precision component manufacture. (SP) Dornfeld

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 metalprocessing, 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 electronic mechanical devices. It also aims to provide a balanced view for the "Management of Technology". (F) Wright

222. Advanced Manufacturing Processes. (3) Three hours of lecture per week. Prerequisites: 122 or consent of instructor. An overview of the theory of manufacturing processes, machine tool design, and process issues in quality, production rate, and flexibility of manufacturing. Nontraditional manufacturing processes will be introduced. Topics covered include overview of models of conventional manufacturing (material removal, joining, forming, and deforming), elements of machine tool error and machine tool component design, rapid manufacturing processes (laser, water jet, electrical discharge machining, electro-chemical machining), rapid prototyping, and process selection, optimization, and planning issues. This course includes the laboratory term project in the application of nontraditional manufacturing processes. (SP) Weinmann

222B. Metal Cutting. (3) Three hours of lecture per week. Prerequisites: Consent of instructor. Metal cutting and metal removal processes; theoretical underpinnings of deformation behavior and material properties; analysis and description of cutting tool materials; forces, temperatures, and surface finishes generated during chip formation. Analytical procedures, including upper-bound and lower-bound theories, finite element methods and general computational tools. Machinability of materials; modern trends in high speed machining and tooling. (SP) Staff

223. Polymer Engineering. (3) Three hours of lecture and one hour of discussion per week. Prerequisites: 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, deformation, and fracture mechanics of various classes of polymers. The course will discuss degradation schemes and long-term performance issues. The class will include polymer applications in bioengineering and medicine. Also listed as Bioengineering C223. (F) Staff

224. Mechanical Behavior of Engineering Materials. (3) Three hours of lecture and one hour of discussion per week. Prerequisites: Civil and Environmental Engineering 130; Engineering 45. This course covers topics in elastic and plastic deformation under static and dynamic loads. Prediction and prevention of failure by yielding, fracture, fatigue, creep, corrosion, and wear. Basic elasticity and plasticity theories are discussed. (SP) Dhawan, Zohdi

225. Deformation and Fracture of Engineering Materials. (4) Three hours of lecture and one hour of discussion per week. Prerequisites: Civil Engineering 130; Engineering 45. This course covers deformation and fracture behavior of engineering materials for both monotonic and cyclic loading conditions. Also listed as Materials Science and Engineering C212. (SP) Zohdi


227. Mechanical Behavior of Composite Materials. (3) Students will receive no credit for both 227 and 290J. Three hours of lecture per week. Prerequisites: Graduate standing or consent of instructor. Formerly 290J. Response of composite materials (fiber and matrix reinforcement) to static, cyclic, creep, and thermal mechanical loading. Manufacturing process-induced variability, and residual stresses. Fatigue behavior, fracture mechanics and damage development. Role of the reinforcement-matrix interface in mechanical behavior. Environmental effects. Dimensional stability 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 128 and 128C. This course will cover the optimal mechanical design of mechanical systems and components. A variety of optimization techniques will be developed, and the design process will be implemented on the computer. (SP) Agogino, MoMains

229. Design of Basic Electro-Mechanical Devices. (3) Three hours of lecture per week. Prerequisites: EECS 100, graduate standing or consent of instructor. Fundamental principles of magnetics, electro-magnetics, semiconductor materials, circuit models and operation of electro-mechanical devices. Type of device to be used in a particular application and dimensions of parts for the overall design will be discussed. Typical applications covered will be linear and rotary actuators, stepper motors, AC motors, and DC brush and brushless motors. A design project is required. (F) Staff

230. Real-Time Applications of Mini and Micro Computers. (4) Three hours of lecture and three hours of laboratory per week. Basic understanding of computer systems. Basic understanding of electronic circuits or an equivalent course in electronics or computer science. Four hours of lecture and one hour of discussion per week. Also listed as Electrical Engineering 120C. (F) Staff

231. Computer-Aided, Optimal Mechanical Design. (3) Three hours of lecture per week. Prerequisites: Graduate standing and the equivalent of both 128 and 128C. This course will cover the optimal mechanical design of mechanical systems and components. A variety of optimization techniques will be developed, and the design process will be implemented on the computer. (SP) Agogino, MoMains


233. Advanced Control Systems II. (3) Three hours of lecture and one hour of discussion per week. Prerequisites: 232. Linear Quadratic Optimal Control, Stochastic State Estimation, Linear Quadratic Gaussian Problem, Loop Transfer Recovery, Adaptive Control and Model Reference Adaptive Systems, Self Tuning Regulators, Repetitive Control, Application to engineering systems. (SP) Tomizuka, Horowitz

234. Multivariable Control Systems Design. By Students 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 classical 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, Poolla

235. Switching Control and Computer Interfacing. (4) Three hours of lecture and three hours of laboratory per week. Prerequisites: 230. Design and analysis of microcomputers utilizing digital and microprocessor devices for sequential logic. Applications to control of mechanical systems and control computer interfacing. (SP) Auslander


237. 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 manufacturing. Environmental effects. Dimensional stability and thermal fatigue. Application to polymer, metal, ceramic, and carbon matrix composites. (SP) Dharan
products and the use of embedded microcomputers in products and machines. The course has two components: 1) Formal lectures. Students receive a set of formal lectures on the design of smart machines and the use of embedded microcomputers. Materials cover machine components, actuators, sensors, basic electronic devices, embedded microprocessor systems and control, power transfer components, and machine control. 2) Projects. Students will design and construct prototype products that use embedded microcomputers. (F) Kazerooni

C240A. Advanced Marine Structures I. (3) Three hours of lecture per week. Prerequisites: Graduate standing, Statistics 25 or equivalent. Formerly 240A. An introduction to the physics of wave forces on marine structures. Basic mathematical description of ocean waves and wave action on marine structures. These topics are followed with discussion of structural strength and reliability analysis. Also listed as C240A. (SP) Szeri

C240B. Advanced Marine Structures II. (3) Three hours of lecture per week. Prerequisites: Graduate standing. Formerly 240B. This course is concerned with the structural response of marine structures to environmental loads. Overall response of the structure as well as the behavior of its members under lateral and compressive loads are discussed. Also listed as Ocean Engineering C240B. (SP) Mansour


251. Heat Conduction. (3) Three hours of lecture per week. Prerequisites: 151; Engineering 230A. Analytical 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) Greif

253. Thermal Radiation. (3) Three hours of lecture per week. Prerequisites: 151. Thermal radiation properties of gases, liquids, and solids; the calculation of radiation energy transfer. (F) Grigoropoulos, Majumdar


255. Energy Transfer in Gaseous and Condensed Phases. (3) Three hours of lecture per week. Prerequisites: 254 or consent of instructor. Course introduces statistical thermodynamics, kinetic theory, and reaction theories, all at the level of microscopic energy transfer processes, used for modeling of gaseous and gas-surface reactive systems. (SP) Frenklach


257. Advanced Combustion. (3) Three hours of lecture per week. Prerequisites: 256. Critical analyses of combustion phenomenon. Conservation relations applied to reacting systems. Reactions are treated by both asymptotic and numerical methods. Real hydro- kinetic models are 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 associated with phase change processes. Topics include thermodynamics of phase change, evaporation, condensation, nucleation and bubble growth, two-phase flow. Viscous bodies 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, nonequa- librium thermodynamics, and kinetic theory concepts used to analyze thermophysics of microscale systems 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 understanding of the various aspects of flow. Rigorously derived the equation of motion. Incom- pressible 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. Advanced discussion of fluid mechanics by applying the essential physical mechanism in complex canonical flow problems which leads to simplified yet accurate flow approximations. Use of potential flows, rotational flows, flow stability and transition, introduction to turbulence. (SP) Staff

262. Theory of Fluid Sheets and Fluid Jets. (3) Three hours of lecture per week. Prerequisites: 185 and 106. Theoretical basis for three dimensional flows for incompressible and viscous fluids. Direct formulation of non-linear theories for sheets and jets for these fluids with surface tension and gravity. Application to wavy waves, hydraulic jump, flow over a flat plate, boating. Canada, instability in a viscous jet. (F) Marcus


264. Waves in Fluids. (3) Three hours of lecture per week. Prerequisites: 261. Propagation of linear and non-linear waves in fluids. Wave interactions in gases and liquids, shock waves, transonic and supersonic flows. Dispersion and dissipation analog with surface water waves. (F) Staff

267. Geophysical Fluid Mechanics. (3) Three hours of lecture per week. Prerequisites: 265A or equivalent. An introduction to the fluid mechanics and atmospheric physics of the Earth’s interior (mantle and core). Buoyancy and creeping flow. Rotation inside a sphere. Modes of wave propagation in rotation and stratified flows. (F) Staff

268. Physicochemical Hydrodynamics. (3) Three hours of lecture per week. Prerequisites: A first grad- uate course in fluid mechanics such as 260A-260B. Physicochemical hydrodynamics deals with the inter- action of fluid motion and physical, chemical, and bio- chemical processes. The usual Navier-Stokes equa- tions of motion are supplemented with coupled equations describing processes that are essential as mass and momentum balances to the phenomenon of interest. The class assumes a first graduate course ub fluid mechanics, but provides the necessary physico- chemical background. Each section begins with a care- ful discussion of physical issues to provide a context for the coupled equations. The first major topic of the field is broad, the emphasis here is on problems in which short-range forces can be important: particle capture, stabilization of colloidal suspensions and the mechanics of droplets. There are therefore covered together with the nec- essary hydrodynamic background. The aim is to in- troduce physical problems not normally covered in graduate classes in fluid mechanics, and to present the models and methods used to illuminate them. (SP) Morris

269. Magnetohydrodynamics and Materials Pro- cessing. (3) Three hours of lecture per week. Prerequisites: 260A or consent of instructor. Magnetic fields are used to control fluid motions in many types of materials processing, ranging from the continuous casting of steel and aluminum to the growth of single semiconductor crystals. The flows are prone to insta- bility, the technical problem thus being to control the in- stability by proper shaping of the applied field. This course is an introduction to MHD, with applications to processing. (SP) Morris

273. Oscillations in Linear Systems. (3) Three hours of lecture per week. Prerequisites: 104 and 133. Re- quired for some of the core and core transfer systems. Linear, damped and undamped, to harmonic and general time-dependent loading. Convolution integrals and Fourier and Laplace Transform methods. Lagrange’s equations. Euler-Lagrange equations. 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. Stochastic processes, random forces. Analysis of linear and nonlinear, discrete and continuous, mechanical systems under stationary and nonsta- tionary excitations. Vehicle dynamics. Applications to failure analysis and reliability calculations. Statistical analysis of their applications to vibratory systems. (SP) Ma

275. Advanced Dynamics. (3) Three hours of lecture per week. Prerequisites: 175. Review of Lagrangian dynamics. Legendre transform and Hamilton’s equa- tions. Cyclic coordinates, Canonical transformations, Hamilton-Jacobi theory, integrability. Dynamics of asymmetric systems. Approximation theory. Current topics in analytical dynamics. (F) Staff

280A. Introduction to the Finite Element Method. (3) Three hours of lecture and one hour of discussion or computer laboratory per week. Prerequisites: Mathematics 54A-54B; some familiarity with elementary field theory, mechanics and mechanics of fluids and solid science. Formerly 280. Weighted-residual and variational methods of approximation. Canonical construction of finite element spaces. Formulation of element and application. Application 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. A brief review of continuum mechanics. Consistent linearization of kinematic variables and balance laws. Incremental formulations of the equations of motion. Solution of the nonlinear field equations by Newton’s method and its variants. 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 53, 54. Methods of tensor calculus and classical differential geometry. The tensor concept and the calculus of tensors, the Riemann-Christoffel tensor and its properties, Riemannian and Euclidean geometry of a surface, formulation of the Gauss-Weingarten, and equations of Gauss and Codazzi. (F) Casey


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 microheterogeneous materials, with a central theme being the determination of relationships between the microstructure and the macroscopic response or “macroscale property.” The course is self-contained 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 development of new materials. Examples draw primarily from various mechanical, dissipative, and thermal applications, although the techniques developed apply to any partial differential system possessing oscillatory coefficients. (SP) Zohdi

288. Theory of Elastic Stability. (3) Three hours of lecture per week. Prerequisites: 185 and 281. Stability theory based upon nonlinear three-dimensional theory of elasticity. (F) Steigmann

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 Discreted) surfaces. Nonlinear constitutive equations for finitely deformed elastic shells. Linear theory and a special nonlinear theory with small strain accompanied by large or moderately large rotations. Applications. (FSP) Johnson, Steigmann

290A. Nonlinear Dynamics of Continuous Systems. (3) Three hours of lecture per week. Prerequisites: 175, 185. This course uses methods from dynamical systems theory for the analysis of the nonlinear dynamics of elastic bodies. Model 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 rod 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 account of generalized continua with extensive illustrative applications to diverse areas in fluid and solid mechanics. Illustrative applications will be drawn from such topics as liquid crystals, microcracking of brittle materials, aspects of cell biology, fluid flow problems (both inviscid and viscous flow) for free flow in channel and microscale of any shape, motion of jets of arbitrary cross-section, nonlinear deformation of elastic rods and shells and flow in pipes, among others. (SP) Staff

290C. Topics in Fluid Mechanics. (3) Three hours of lecture per week. Prerequisites: 185. 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, oceanography, free surface flows, non-Newtonian fluid mechanics, among other possibilities. (FSP) Savas, Yeung

290D. Solid Modeling. (3) Three hours of lecture per week. Prerequisites: Computer Science 61B or equivalent, linear algebra; Computer Science 194 recommended. Graduate survey of solid modeling research. Representations and algorithms for 3D solid geometry. Applications in design, analysis, planning, and manufacturing of mechanical parts, including CAD/CAM, reverse engineering, meshing, data acquisition, mold-making, and rapid prototyping. (SP) McManis


290F. Case Studies in Fire Safety Engineering Science. (3) Three hours of lecture per week. Prerequisites: 101F, 105. The fundamental physics and chemistry of fire are applied to case-study full-scale fires. Emphasis is on modeling the detailed fluid mechanics, heat transfer and combustion processes as they have occurred in these examples. State of the art computer analysis is stressed. (SP) Staff


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 hypothesis testing. Applications in probabilistic mechanical engineering design and failure diagnostics. Use of automated inference diagrams to codify expert knowledge and to evaluate optimal design decisions. (SP) Aguila

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 both classical and recent work in on-line system identification. Numerical, practical, and theoretical aspects will be covered. Topics treated include time and frequency domain methods, generalized parametric identification, identification of non-linear systems, modeling uncertainty bounding, and state-space methods. (FSP) 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
Ocean Engineering

Lower Division Courses

84. Sophomore Seminar. (1,2) Course may be re-peated for credit as topic varies. One hour of seminar per week. Must be taken on a satisfactory/unsatisfactory basis. Prerequisites: Graduate standing.


297. Engineering Field Studies. (1-12) One to twelve hours of independent study per term. Must be taken on a satisfactory/unsatisfactory basis. Supervised experience relative to specific aspects of practice in engineering. Under guidance of a faculty member, the student undertakes an internship in industry. Emphasis is to attain practical experience in the field. (F,SP) Staff

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

299. Individual Study or Research. (1-12) Course may be repeated for credit. 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. (and other doctoral degrees). (F,SP) Staff

Professional Courses

301. Teaching of Mechanical Engineering at the University Level. (1-6) 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 the laboratory. Use of media resources. Student evaluation. Laboratory instruction. Curricula in mechanical engineering. Practice teaching. This course is open to Teaching Assistants of Mechanical Engineering. (SP) Staff

C240B. Advanced Marine Structures II. (3) Three hours of lecture per week. Prerequisites: Graduate standing. Formerly Mechanical Engineering 240B. This course is concerned with the structural response of marine structures to environmental loads. The overall response of the structure as well as the behavior of its members under lateral and compressive loads are discussed. Also listed as Mechanical Engineering C240B. (SP) Mansour


C268F. Risk Assessment and Management of Technology. (3) Three hours of lecture per week. Prerequisites: Graduate standing. Design engineering aspects associated with achieving desirable quality (serviceability, safety, durability, compatibility) and reliability of engineered systems. Human and organizational factors in the life-cycle (design, construction, operation, maintenance, decommissioning) reliabilities of engineered systems. Approaches to improve quality and reliability are advanced: proactive, reactive, and interactive strategies. Also listed as Civil and Environmental Engineering C268F. (SP) Bea, Roberts

C290A. Human and Organizational Factors: Risk Assessment and Management of Engineered Systems. (3) Three hours of lecture/discussion per week. Prerequisites: Graduate standing. Design engineering aspects associated with achieving desirable quality (serviceability, safety, durability, compatibility) and reliability of engineered systems. Human and organizational factors in the life-cycle (design, construction, operation, maintenance, decommissioning) reliabilities of engineered systems. Approaches to improve quality and reliability are advanced: proactive, reactive, and interactive strategies. Also listed as Civil and Environmental Engineering C290A. (SP) Bea

B prefix=language course for business majors
C prefix=cross-listed course
R prefix=course satisfies R&K requirement
AC suffix=course satisfies American cultures requirement
*Professor of the Graduate School
†Recipient of Distinguished Teaching Award
The Program in Medieval Studies

The Medieval Studies Program at Berkeley is an interdisciplinary group that coordinates and sponsors lectures, events, and visiting professorships, promotes research on medieval studies, offers courses in common to medievalists of different academic departments, and communicates information of interest among them. The committee on Medieval Studies hosts a Distiguished Visiting Professor who is in residence for either the fall or the spring semester. Normally this is a preeminent senior scholar whose permanent residence is outside the United States. The committee offers a joint program in which candidates have both a home department and training in the core disciplines of medieval studies.

The Joint Ph.D. Degree

Graduate students must be accepted for admission to a regular department (e.g., English or History) before applying for a joint degree in medieval studies. The degree granted is the joint Ph.D. in and medieval studies (e.g., English and medieval studies, history and medieval studies). The joint Ph.D. is designed to preserve established standards of training in a major subject while broadening the student’s experience in other aspects of medieval studies. A candidate for the joint Ph.D. is expected to fulfill all the Ph.D. requirements of the major field of study. There are four additional requirements for the joint degree. (1) Completion of Medieval Studies 200, the graduate seminar. (2) Advanced competence in Latin, as demonstrated through either a special examination or approved course work. (3) Graduate seminars in two fields outside the student’s home department. Graduates in these fields must be history. Students whose home department is History will substitute another field in consultation with the graduate adviser. (4) A proposal for the Ph.D. qualifying examination. A representative of Medieval Studies must serve on the Ph.D. orals examination committee.

Undergraduate Program

There is no undergraduate major. Students whose interests lie in the medieval period should consider setting up an individual major (for requirements see Earning Your Degree: A Guide for Students in the College of Letters and Science). A proposal for an undergraduate minor is pending. If approved, it will be announced on the Medieval Studies web site and in the online General Catalog.

Curriculum

The program offers some of its own courses. These include Medieval Studies 200, the team taught graduate seminar in medieval studies 190, and 250, two special topics courses taught by the Distinguished Visiting Professor; and occasional courses in Medieval Latin, paleography, and manuscript studies. Students are urged to consult the medieval offerings in the depart- ments or programs of Art History, Celtic Studies, 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 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, cildogy). 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 manuscripts as primary sources for scholarship in a variety of disciplines (including literary studies, art history, music, intellectual history, social history, and canon law). After reviewing the funda- ments of paleography and codicology, students will compare various manuscripts using digitized images from special collections, including the Bancroft Library of U.C. 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)

210. Paleography and Codicology. (4) Course may be repeated for credit as topic varies. Three hours of seminar per week. Prerequisites: Consent of Instructor required. Instruc- tion in Medieval Latin paleography and/or the paleography of one or more of the medieval vernacular languages of Western Europe, including the evolution of scripts as well as practice in reading them. Ancillary instruction in the principles of cod- icology with attention to the process of text-making and binding. (F,SP)

241. Latin Literature of the Middle Ages. (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: Latin 200 or consent of instructor. Graduate readings in Medieval Latin with attention to the evolu- tion of literary forms and genres from Late Antiquity to the close of the Middle Ages. Students who take the course for 2 units must enroll on a satisfactory/unsatisfactory basis. Students who take it for 4 units must enroll for a letter grade. Also listed as Classics C241.

250. Seminar in Medieval Culture. (2-4) Course may be repeated for credit. Course may be taken for less than four units 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 principal specialty. In the event 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

(Microbiology (College of Natural Resources, Interdepartmental Graduate Group)

Office: 111E Koshland Hall, (510) 642-5167
http://plantbio.berkeley.edu
Chair: John Taylor, Ph.D.

Professor

Lisa Alvarez-Cohen, Ph.D. (Civil and Environmental Engineering)
Jill Bartlett, Ph.D. (Earth and Planetary Sciences and Plant and Microbial Biology)
Carolyn Bertozzi, Ph.D. (Chemistry and Molecular and Cell Biology)
Michael R. Botchan, Ph.D. (Molecular and Cell Biology)
Thomas A. Burns, Ph.D. (Molecular and Cell Biology)
Bob B. Buchanan, Ph.D. (Plant and Microbial Biology)
Gertrud C. Buxing, Ph.D. (Molecular and Cell Biology)
Richard Calendar, Ph.D. (Molecular and Cell Biology)
Zachues Cano, Ph.D. (Molecular and Cell Biology and Plant and Microbial Biology)
Douglas S. Clark, Ph.D. (Chemical Engineering)
Nicholas R. Cozzarelli, Ph.D. (Molecular and Cell Biology)
Mary K. Firestone, Ph.D. (Environmental Science, Policy and Management)
Susanne M. Flesig, O.D., Ph.D. (Optometry)
N. Louise Glass, Ph.D. (Plant and Microbial Biology)
Andrew C. Jackson, Ph.D. (Plant and Microbial Biology)
David Jenkins, Ph.D. (Civil and Environmental Engineering)
N. Keiding, Ph.D. (Molecular and Cell Biology)
Daniel E. Kosinski, Ph.D. (Molecular and Cell Biology)
Sydney G. Kush, Ph.D. (Plant and Microbial Biology)
Terrace Leighton, Ph.D. (Molecular and Cell Biology)
Steven E. Limow, Ph.D. (Plant and Microbial Biology)
Terry E. Machen, Ph.D. (Plant 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)
George F. 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)
Lois M. Tormer, Ph.D. (Molecular and Cell Biology)
Loy E. Volkman, Ph.D. (Plant and Microbial Biology)
Patricia M. Zambryski, Ph.D. (Plant and Microbial Biology)
David Zuzman, Ph.D. (Molecular and Cell Biology)

Associate Professors

Andrew O. Jackson, Ph.D. (Plant and Microbial Biology)
The Graduate Program in Microbiology

The Graduate Program in Microbiology is composed of 43 faculty from diverse departments, colleges, and schools (Plant and Microbial Biology; Molecular and Cell Biology; Public Health; Civil and Environmental Engineering; Chemical Engineering; Environmental Science, Policy, and Management; Nutritional Sciences and Toxicology; Optometry; and Integrative Biology) 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 disciplines through an integrated 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 levels of organization, as well as the interactions of microorganisms with other organisms.

The graduate program features an introductory seminar (Faculty Review), a one-semester core course, and additional special-topic courses and seminars in areas of faculty specializations. The core course, Critical Thinking in Microbiology, addresses the following areas: biochemistry, physiology, and development; genetics and genomics; population biology and evolution; ecology; and pathogenesis.

Faculty in the Graduate Group in Microbiology have research interests in four broad areas: ecology and evolution, genetics and development, physiology and biochemistry, and host-microbe 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 are expected to demonstrate academic excellence and potential for independent scientific research and to have satisfied, or satisfy through additional course work, the curriculum required of an undergraduate major in microbial biology. Students are expected to have a background in chemistry, physics, mathematics, and biology. An 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 statements of academic 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 detailed information on financial aid, such as teaching and research assistantships, should contact their graduate advisor.

Program Overview

The interdisciplinary major in Middle Eastern studies (MES) provides an opportunity to study a region of historical and contemporary significance in a variety of academic disciplines. The major allows students to combine a broad and balanced course of study in the region with a focus on an area of interest. Students gain a breadth of understanding of the Middle East, its history and culture, and current political, economic, and social development.

The major is under the academic supervision of the Center for Middle Eastern Studies and its affiliated faculty members. (For a complete list of Middle East faculty and academic staff, go to the Center for Middle Eastern Studies website.)

The Center organizes public lectures, publishes a newsletter once a semester, and maintains a reading room. Students are encouraged to use the center's resources. The major is administered through the International and Area Studies Teaching Program (IASTP) office. Students should also obtain the “Courses in Middle Eastern Studies” list available at the beginning of each semester at the Center for Middle Eastern Studies, Stephens Hall. All concentration courses must be pre-approved by an MES adviser in the IASTP office.

Concentration courses should be selected with a view toward developing in-depth knowledge of one particular aspect of the region. Specialized fields of study may include religious and cultural studies, contemporary economic development and social change, urbanization, nation building, the impact of imperialism and colonialism on the Middle East, or a topic agreed upon between the student and an MES adviser.

Occasionally, when taught by a Middle Eastern specialist, courses may address Middle East issues to some extent. Depending on the degree to which the Middle East is treated, students may be permitted to use the course to fulfill a survey requirement or be incorporated into the concentration. Students must obtain written permission in advance from the MES adviser on an exceptional basis. Courses in Middle Eastern Studies, available from the Center for Middle Eastern Studies, are listed in the University Seminar Program and in the University's Academic Calendar.
Middle Eastern Studies

**Minor in Middle Eastern Studies**

The minor in Middle Eastern Studies is designed to introduce students to the study of the modern Middle East (the Arab, Turkic, Persian, and Israeli nations) through social science and humanities courses. (Students interested in emphasizing language, archaeology and/or ancient civilizations should investigate minors in the Department of Near Eastern Studies.)

**MES minor course requirements.** One introductory lower division course from the following:

- NES 10, History 9D, or MES 20. Five upper division courses about the Middle East selected from a pre-approved course list (A complete list is available at the IASTP office but examples include Anthro 181, Arch 123, History 109A-109B-109C, Poli Sci 142A-142B). Substitutions must be approved by an MES adviser.

**Completing the MES minor.** Since the MES minor is interdisciplinary, the five upper division courses must be taken from at least two departments. The study of modern Middle Eastern languages is encouraged; however, there is no language requirement for the MES minor, nor may language courses count toward the minor. The six courses taken to satisfy minor requirements must total 22 or more units. All courses must be taken for a letter grade, MES 97, 98, 99, 197, 198, 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 adviser.) Students must achieve a minimum overall GPA of 2.0 in the courses used to satisfy minor requirements. Students must complete their work in the minor within the 130-unit maximum limit for graduation. Only one course may be double-counted with a major program.

More detailed descriptions of the MES major and minor, as well as application information, are available from the International and Area Studies Teaching Program, 101 Stephens Hall, or the Center for Middle Eastern Studies, 340 Stephens Hall.

**Lower Division Courses**

- **20. Perspectives on the Middle East.** (2) Two hours of seminar per week. Weekly seminar including guest speakers on (1) ethnic perspectives (Persians, Arabs, Turks, Israelis); (2) religious perspectives (Islam, Christianity, Judaism); and (3) disciplinary perspectives (anthropology, sociology, etc.). The seminar introduces students to the work of several major Berkeley Middle East scholars. The seminar offers subsidies and admission preference is given to lower division students and prospective Middle Eastern majors. (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 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) Course may be repeated for credit with different instructor. One to four hours of directed group study per week. Must be taken on a passed/not passed basis. Prerequisites: Consent of instructor. Seminars in various fields of Middle East studies designed to introduce beginning undergraduates to problems of importance to students interested in the Middle East. Topics to vary from semester to semester. (F,SP)

**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 address 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) Staff

**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 Topcs.** (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 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 fifteen 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-H195B. Honors in Middle Eastern Studies.** (1-4;1-4) Weekly discussion with faculty thesis adviser. Credit and grade to be awarded on completion of sequence. Prerequisites: Senior standing with a grade point average of 3.3 in major and overall; consent of instructor. The Senior Honors Thesis is a two semester sequence which culminates in a senior thesis. The thesis will be supervised by a member of the faculty appropriate to the student’s interest chosen by the student in consultation with his or her major adviser. Students must register for both MES H195A and H195B for 1-4 units for a letter grade. At the end of MES H195A the student receives a grade of IP (in progress); at the end of MES H195B the student turns in the honors thesis and receives grade. (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. Seminar for the group study of selected Middle Eastern related topics not covered by regularly scheduled courses. A written proposal must be approved by a Middle Eastern Studies faculty adviser. Final paper required. Units determined on consultation with instructor. (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. For students wishing to pursue an interest not represented in the curriculum by developing an individual program of study and research supervised by a faculty member. A written proposal must be approved by a Middle Eastern Studies faculty adviser. Final paper required. Units determined on consultation with instructor. (F,SP)
Military Affairs' Education Program (ROTC) (Special Studies)

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 procedures as other Berkeley faculty members, and the Academic Senate’s Committee on Courses must approve its curriculum. Military Affairs courses are open to all 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: http://military.berkeley.edu/about.html or consult the program advisors in the appropriate unit:
Department of Military Sciences: (510) 642-3374
Department of Naval Sciences: (510) 642-3551
Department of Aerospace Studies: (510) 642-3572

Military Affairs

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 physical fitness. 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, exercise, physical fitness programs, program development, phases of conditioning, environmental factors, and nutrition. Physical training will include, but is not limited to: running up to five miles, foot marches, exercise with a pack, swimming, aerobics, sports, weight training, aerobics, and other activities designed to develop an individual’s components of fitness, teamwork, and aggressive competitive qualities. (F,SP) Brohier, Hodges, Miller

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)

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. (F,SP) Staff

Upper Division Courses
120. The Evolution of American Warfare: 1607-1900, (3) Three hours of lecture per week. Historical analysis of American theory of warfare from colonial period and Revolution through Spanish American War. Social, economic, and political influences are examined, tracing the evolution of the American military. Effects of institutions on organizational structures, technology, and the practice of warfare are emphasized. (F) Staff

121. The Evolution of American Warfare: 1900-1980, (3) Three hours of lecture and one hour of discussion 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. Emphasis is on the warfighting themes and 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) Two hours of lecture and one and one-half hours of discussion 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 in the War in Korea and Vietnamese War. (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. Prerequisite: Consent of instructor. Conceptually examines the Armed Forces as an integral element of American society. Examines contemporary issues in civil-military relations and the national and international environment in which U.S. defense policy is formulated and implemented. (F) Morris

145B. Preparation for Active Duty, (3) Three hours of lecture and for cadets only, a two-hour advanced leadership seminar 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, and various topics for specific discussion include the military justice system, military ethics, core values, military professionalism and current issues affecting the Air Force, and a general introduction to training designed to ease cadets’ transition to active duty. This course combines lecture and discussion with increased emphasis on the students’ written and oral communication skills. (SP) Morris

154. The History of Littoral Warfare, (3) Three hours of lecture per week. Analysis of the theory, origins and historical evolution, and impact of man’s attempts to project seapower ashore. A case study approach is used to study major developments in amphibious warfare. (F) Brohier

Military Officers’ Education Program (ROTC) / 357

Aerospace Studies (Air Force ROTC)
Department Office: Hearst Gymnasium, (510) 642-3572
http://airforcrotc.berkeley.edu/

The Department of Aerospace Studies offers students in virtually all academic areas the opportunity to qualify for a commission in the United States Air Force while simultaneously completing their university graduate and undergraduate degree requirements. Eligible students must have at least two full academic years remaining in their bachelor’s or graduate degree program.

Students interested in the general military course are eligible to compete for scholarships which cover the costs of tuition, books, and most fees; also, a $250-$400 monthly living allowance is paid to each student on the college scholarship. Freshmen and sophomores competing for scholarships should contact the department.

Students not taking the general military course may still be eligible for the two-year professional officer course. This upper division program is open to students who have at least two full years of study remaining in their academic program. Selection for the professional officer course is based on such factors as aptitude, interest, college grades, and leadership potential. Students selected for the professional officer course are provided uniforms, textbooks, and a $350 or $400-per-month allowance while they are active in the program. Upper division standing is required to enter the two-year program, but exceptions can be made for lower division students who can complete degree requirements in two years. It is also possible to take all or part of the professional officer course as a graduate student.

Both the two-year and the four-year AFROTC programs emphasize student participation and involvement. Classes are conducted as seminars and call for active student discussion. In addition, there is a weekly two-hour leadership laboratory that is mandatory for all AFROTC cadets. In this laboratory, students become involved in the management of their own cadre organization. Students also participate in projects, visits to Air Force bases, and orientation flights.

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 24, AS 2A, AS 2B, AS 135A, AS 135B, MA 145A, MA 145B. Students enrolled in a two-year program need only take 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/discussion per week. Introductionary survey of the U.S. Air Force. Explores evolutionary factors affecting the nature and control of the
Military Science (Army ROTC)  
Department Office: Hearst Gymnasium, (510) 642-3374  
http://ls.berkeley.edu/dept/milsic/index.html

The Army Officer Education Program offers a variety of credit courses focused on the study of military as an institution, adventure training opportunities, and a program of laboratory work in military sciences. The program provides opportunities to examine services by the use of a baccalaureate degree. A student who completes the program may earn a commission in the Regular Army, Army Reserve, or National Guard.

Graduate or undergraduate students can complete the Military Science requirements through a four-year, three-year, or two-year program. The four-year and three-year programs involve the basic and advanced courses; the two-year program involves only the advanced course. The Army ROTC Basic Course consists of two distinct components, the classroom introduction to the army profession and officer training of the Military Science and Leadership (MSL) I year, and the experiential examination of leadership, decision-making, and group process of the MSL-II year. Both Basic Course years are designed to enhance student interest in the Army. MSL-I lessons provide an overview of the key subjects of pre-commissioning, which will be treated in much greater depth in the Advanced Course. The MSL-II year places cadets in a variety of leadership roles designed to emphasize various leadership competencies and insights. These events are held both inside the classroom and in the outdoor settings. The instructor, acting as facilitator, helps guide student processing, or after-action reviews, of the events to derive the leadership, group dynamics, and problem-solving lessons that the exercises offer. In addition to these required “life skills” are emphasized throughout the two years. By the end of the Basic Course, cadets should possess a basic understanding of the unique aspects of the officer corps, individual fitness, and healthy lifestyle. The lessons are designed to maximize cadet participation, inspire intellectual curiosity, and stimulate self-study. Upon completion of the course, cadets are eligible to enter the advanced course.

The Army ROTC Advanced Course is composed of four advanced courses, Military Science (MS) 431, MS 432, MS 141, and MS 142, and the Leadership, Development, and Assessment Course (LDAC). The Advanced Course is designed to teach all knowledge, skills, and attitudes for commissioning as a second lieutenant, and to establish a sound foundation for a career as a commissioned Army officer. The content and methods of the Advanced Course assume no prior cadet experience or other military training. This approach is taken because the Advanced Course comprises the minimum curriculum that an individual must complete in order to be commissioned. Advanced Course lessons are carefully sequenced and linked and are progressive in their treatment of key officer knowledge and competencies. Students are encouraged to synthesize lessons to form broader perspectives, deeper insights, and more robust problem-solving abilities by the use of earlier lessons. The sequencing of lessons is also designed to meet the immediate needs of cadets by addressing topics needed for success in the performance of cadet responsibilities early in the MS 431 term and at the LDAC. Topics are designed to facilitate entry into active military service during the MS 142 term.

The two-year program begins with direct placement in the advanced course. It is available to undergraduate or graduate students who have completed any of the following: enlisted military service; the Army’s Leadership Training Course (LTC), which is a five-week ROTC basic camp at Fort Knox, Kentucky; or three years of Junior ROTC. Students must also be academic juniors or higher with at least two academic years left until completion of their degree when they enter the advanced course.

Financial Assistance and Scholarships. All advanced-course students receive a stipend of $350 (juniors) or $400 (seniors) monthly (nontaxable) for up to 10 months a year. Students may compete for two, three, or four-year ROTC scholarships. One need not be enrolled in the program to compete for ROTC scholarship. A scholarship includes money to cover tuition and fees, which can be used instead toward campus room and board in the amount of the authorized tuition and fees; an annual textbook allowance of $500; and a monthly stipend. Advanced-course scholarship students go on to receive a commission and serve as officers in the military for at least eight years, either on active duty or in the Army National Guard or Reserve, or a combination of the two.

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. This 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 one credit seminar-style 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 the student accurate insight into the Army profession and the office of the commissioned officer in the Army. The course emphasizes self-study. (F,SP) Staff

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 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 containing 14 one-hour (50-minute) lessons as follows:
   - Module I—Communications.
   - Module II—Personal Development (time/personal management).
   - Module III—Physical Well-Being (physical fitness, stress management).
   - Module IV—Leadership (definition, AOR model, Army Be-Know-Do-model, character, and competence).
   - Module V—Values and Ethics (morals vs. ethnics, ethical decision making, Army (institutional values).
   - Module VI—Leadership (definition, AOR model, Army Be-Know-Do-model, character, and competence).

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100. Individual Leadership Studies. (2) Two hours of lecture/discussion per week. The purpose of this two credit hour course is to develop students' knowledge 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 4 modules encompassing 30 one-hour (50 minute) lessons as follows:

Module 1—Enhanced Skills Training Program—This web based program assesses individual student strengths and weaknesses in mathematics and English and designs a program of self study to improve individual weak areas to meet or exceed, minimum capabilities.


Module 3—Individual Leadership Skills Development—Communications, Writing, Values, Ethics, Confidence Building.

Module 4—Leadership/Team Building—Group Dynamics, Leadership Case Studies. (F) Miller

101. Leadership and Teamwork. (2) Two hours of lecture/discussion per week. This course examines how to be effective team members, various methods for influencing action, effective communication in setting and achieving goals, the importance of timing the decision, creativity in the problem-solving process, and coordination of team members through immediate feedback. Instruction focuses on self-development guided by knowledge of self and group processes. Experiential learning activities are designed to challenge students' critical thinking and analytical skills. This course also provides equivalent preparation for the ROTC Advanced Course as the Leaders Training Course at Fort Knox, Kentucky. (SP) Miller

141. Leadership and Management. (3) Three hours of lecture per week. Prerequisites: Consent of instructor. This course begins with a series of lessons designed to enable cadets to make informed career decisions as they prepare their academic courses. The next lessons concentrate on army operations and training management, communications and leadership skills, and support the beginning of the final transition from captain to lieutenant. This course enables cadets to attain knowledge and proficiency in several critical areas that they will need to operate effectively as an Army officer, including the Army's training management system, coordinating activities with staff, and integration of specific training and educational functions. Assignments focus on self-development guided by knowledge of self and group processes. Experiential learning activities are designed to challenge students' critical thinking and analytical skills.

Naval Science (Naval ROTC)


The Department of Naval Science offers several programs of instruction 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 will normally complete the following courses during their first two years as part of their overall academic load: NS 1, NS 2, NS 3, and NS 10.

Navy Option students enrolled in either the four-year or two-year program will normally complete the following leadership courses for junior and senior years: NS 12A, NS 12B, NS 401 and NS 412. Marine Option students will participate in a Marine seminar and complete a sequence in the History of Littoral Warfare (MA 154) and a tutorial in the Evolution of Amphibious Warfare. All Navy Option scholarship students must complete one year of calculus and one year of calculus-based physics by the end of their sophomore and junior years respectively.

Students are also required to attend weekly professional development laboratories. These three-hour sessions offer the student midshipman an active role in the management of his or her midshipman battalion and provide time for the midshipmen to explore professional topics. Student midshipmen participate in four-to-six week sessions during their second and third years. Corps students apply theoretical aspects of their education and training to the real world environment of a Navy ship. Marine Option midshipmen attend Marine Corps Officer Candidate School in the summer between their junior and senior years.

Currently, there are five programs available:

1. NROTC Four-Year Scholarship Program: Nationwide competition is open to physically qualified men and women between the ages of 17 and 23, with the same active duty age as above as able bodied college freshman, junior, senior, or five-year curriculum. U.S. citizenship is required. One year of calculus is required before entrance into the program. Two-year scholarship students must complete their junior year in a two-year program. (Obligated service is not incurred until the start of the junior year in the four-year college program. Scholarships may be offered to highly qualified college program students.

2. NROTC Four-Year College Program: Open to physically qualified men and women between the ages of 17 and 23, with the same active duty age as above as able bodied college freshman, junior, senior, or five-year curriculum. U.S. citizenship is required. One year of calculus is required before entrance into the program. Two-year scholarship students must complete their junior year in a two-year program. (Obligated service is not incurred until the start of the junior year in the four-year college program. Scholarships may be offered to highly qualified college program students.

3. NROTC Two-Year Scholarship Program: Nationwid competition is 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) and two-year program. (Obligated service is not incurred until the start of the junior year in the four-year college program. Scholarships may be offered to highly qualified college program students.

4. NROTC Two-Year College Program: 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) and two-year program. (Obligated service is not incurred until the start of the junior year in the four-year college program. Scholarships may be offered to highly qualified college program students.)

5. NROTC Two-Year College Program: Open to those who will be entering their junior year of undergraduate study (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, before the start of their junior year. Graduates of the Naval Science Institute will receive payment of tuition, fees, 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 four-year active duty obligation. Application deadline is normally March 1 of the sophomore year.
Lower Division Courses

1. Introduction to Naval Science. (2) Two hours of lecture/discussion per week. This course provides a foundation in the organization of the Department of Defense and the naval service, the long-held customs and traditions of the service, basic leadership character development, and the duties of a junior officer. It is designed to provide the students' interest for study in a variety of future courses. (F) Buckey

2. Sea Power and Maritime Affairs. (2) Two hours of lecture per week. Prerequisites: Consent of instructor. Emphasizes the U.S. history of seapower, its concepts, theories, and applications. This course will be offered as a seminar or lecture/discussion per week. (SP) Hiler

3. Leadership and Management I. (3) Three hours of lecture/discussion/seminar per week. This course will cover basic management, decision making, and moral leadership. The student will learn to establish meaningful goals, prioritize among competing demands, and plan and execute a set of coordinated tasks. The course will be given as a seminar or lecture/discussion per week. (SP) Hiler

4. Naval Ship Systems I. (3) Three hours of lecture per week. Prerequisites: Mathematics 1A or 1B and authorization of the Instructor. Emphasis on description and analysis of major types of propulsion plants, both conventional and nuclear. Principles of thermodynamic cycles, electrical theory, power generation and distribution, auxiliary machinery systems. Ship construction, strength and stability in intact and damaged conditions. Factors and design criteria for seaworthiness, structural integrity, and operational employment. (SP) Garza

5. Naval Ship Systems II. (3) Three hours of lecture and one hour of laboratory per week. Prerequisites: Mathematics 1A or 1B and authorization of the Instructor. Emphasis on the practical application of the theory of propulsion plants. Course is divided between the theoretical study of propulsion plants and the operation of ships. (SP) Garza

6. Navigation and Naval Operations I. (3) Three hours of lecture and one hour of laboratory per week. Prerequisites: Consent of instructor. This course will be given as a seminar or lecture/discussion per week. (SP) Garza

7. Navigation and Naval Operations II. (3) Three hours of lecture and one hour of laboratory per week. Prerequisites: Consent of instructor. This course will be given as a seminar or lecture/discussion per week. (SP) Garza

Freshman Seminars. (1) Course may be repeated for credit with consent of instructor. 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. (F,SP) Staff

Program Overview

The Graduate Group in Molecular and Biochemical Nutrition (formerly the Graduate Group in Nutrition) offers a degree program in nutrition and metabolism. Graduate research may be focused at any level of integration from molecules and cells to laboratory animals and humans. The group's research is carried out in a collaborative environment that includes the Departments of Nutrition, Nutritional Sciences and Toxicology, and Molecular and Cell Biology. Graduate students come from across the University of California, Berkeley, and are supported by a variety of grants and fellowships.

Adjoint Professors

Ronald M. Krauss, M.D. (Nutritional Sciences and Toxicology)
Robert O. Ryan, Ph.D. (Nutritional Sciences and Toxicology)
Elizabeth C. Theil, Ph.D. (Nutritional Sciences and Toxicology)

Molecular and Biochemical Nutrition

(College of Natural Resources, Interdepartmental Graduate Groups)

Office: 117 Morgan Hall, (510) 643-2863
http://mnb.berkeley.edu
Chair: Joseph Napoli, Ph.D.

Professors

Bruce N. Ames, Ph.D. (Molecular and Cell Biology)
Leonard F. Bjeldanes, Ph.D. (Nutritional Sciences and Toxicology)
John E. Casida, Ph.D. (Environmental Science, Policy, and Management)
Benito O. deLumen, Ph.D. (Nutritional Sciences and Toxicology)
Sharon E. Fleming, Ph.D. (Nutritional Sciences and Toxicology)
John G. Forte, Ph.D. (Molecular and Cell Biology)
Marc Helferich, Ph.D. (Molecular and Cell Biology)
Isao Kubi, Ph.D. (Environmental Science, Policy, and Management)
Joseph L. Napolit, Ph.D. (Nutritional Sciences and Toxicology)
Z.I. Sabry, Ph.D. (Public Health)
George Sensabaugh, Ph.D. (Public Health)
Barry Shane, Ph.D. (Nutritional Sciences and Toxicology)
Martin Smith, Ph.D. (Public Health)
Hei Sook Sul, Ph.D. (Nutritional Sciences and Toxicology)
Fernando E. Viteri, M.D., D.S.C. (Nutritional Sciences and Toxicology)
Kenneth J. Carpenter, Ph.D. (Emeritus) (Nutritional Sciences and Toxicology)
Janet C. King, Ph.D. (Emeritus) (Nutritional Sciences and Toxicology)
Sylvia Lane, Ph.D. (Emeritus) (Agricultural and Resource Economics)
Angela C. Little, Ph.D. (Emeritus) (Nutritional Sciences and Toxicology)
Sheldon Margen, M.D. (Emeritus) (Public Health)
John B. Nielands, Ph.D. (Emeritus) (Molecular and Cell Biology)
Alexander V. Nichols, Ph.D. (Emeritus) (Molecular and Cell Biology)
Lester Packer, Ph.D. (Emeritus) (Molecular and Cell Biology)
Paola Timiras, Ph.D. (Emeritus) (Molecular and Cell Biology)
Mary Ann Williams, Ph.D. (Emeritus) (Nutritional Sciences and Toxicology)

Associate Professors

Barbara Abrams, Dr. P.H. (Public Health)
Nancy K. Amy, Ph.D. (Nutritional Sciences and Toxicology)
Gregory W. Aponte, Ph.D. (Nutritional Sciences and Toxicology)
George W. Chang, Ph.D. (Nutritional Sciences and Toxicology)
Christopher Vulpe, Ph.D. (Nutritional Sciences and Toxicology)
Susan M. Wang, Ph.D. (Nutritional Sciences and Toxicology)

Molecular and Cell Biology

(College of Letters and Science)

Department Office: 497 Life Sciences Addition, (510) 643-8202
Undergraduate Affairs Office: 2083 Valley Life Sciences Bldg. (VLSB). (510) 643-8995
Graduate Affairs Office: 2029 Life Sciences Addition, (510) 643-5252
http://mcb.berkeley.edu
Chair: Richard Harland, Ph.D.
Vice Chair: Mark Schlissel, M.D., Ph.D.

Professors

Thomas C. Alber, Ph.D. Massachusetts Institute of Technology. Protein folding, stability, and function
Jane P. Allison, Ph.D. University of Texas. Molecular immunology
Bruce N. Ames, Ph.D. California Institute of Technology. Molecular biology, biochemistry, carcinogenesis
Steven K. Beckendorf, Ph.D. California Institute of Technology. Molecular biology of development
Carolyn Bertozzi, Ph.D. University of California, Berkeley. Molecular basis of cell-surface interactions
Michael R. Botchan, Ph.D. University of California, Berkeley. Eukaryotic gene expression
Beth Buetow, Ph.D. University of Texas. Austin. Cell motility, photoreceptor physiology
Carlos J. Bustamante, Ph.D. University of California, Berkeley. Physical biochemistry, biophysics, methods of molecular manipulation
Richard Calendar, Ph.D. Stanford University. Molecular genetics of viruses
W. Zacharias Canede, Ph.D. Stanford University. Cell and developmental biology
Thomas W. Cline, Ph.D. Harvard University. Sex determination in Drosophila
Kathleen Collins, Ph.D. Massachusetts Institute of Technology. Structure and function of the RNA-dependent DNA polymerase, telomeres
Nicholas R. Cozzarelli, Ph.D. Harvard Medical School. DNA replication and recombination
Jennifer Gardiniera, Ph.D. Harvard University. Ribozymes and RNA machines
David G. Drubin, Ph.D. University of California, San Francisco. Cytoskeleton and regulation of cell cycle
Peter H.棣cregge, Ph.D. University of Frankfurt. Genetic structure of retroviruses
Gary L. Firestone, Ph.D. University of Iowa. Molecular endocrinology, tumor biology
John G. Flannery, Ph.D. University of California, Santa Barbara. Cell and molecular biology of the retina

For undergraduate programs in nutrition, go to http://nutrition.berkeley.edu
The undergraduate major

http://mbc.berkeley.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 the disciplinary specializations range from molecular and structural component and Plan II has a more cellular and systems orientation, the perspectives and content of the two plans overlap consider-ably. Students in either plan have been highly successful in entering graduate or medical school and in other science-and-health-re-lated 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-3B (or Chemistry 1A-1B, 112A-112B); Biology 1A-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-C130B, Chemistry 135, MCB 130L, MCB 111/130/140, MCB elective.
• Genetics and Development (G&D): MCB C100A, 100B, 110, 140, 140L, G&D elective.
• Immunology (IMM): MCB C100A, 100B, 110, 140/C142, 150, 150L.

Upper Division Requirements—Plan II

• Cell and Developmental Biology (CDB): MCB 102, 130, 131/136/142, 130L, three CDB electives.
• IMM—Infectious Disease: MCB 102, C142, 150, 150L, MCB 130L.
• BMB—Biochemistry, Genetics and Development, and Microbial Biology (Environmental Science, Policy, and Management).

Honors Program

The MCB honors program offers exceptional senior students recognition for recognizing 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 research including 4 to 8 units of MCB H196; (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 Senior Project Session, or other scientific meeting; 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 provides advanced training in the research fields of the faculty. Students interested in molecular structures and processes of cellular life. The training is intellectually focused, but at the same time offers unusually wide opportunities for varied character. Undergraduate preparation for admission to the program should correspond to one of the two plans of the departmental undergraduate major detailed above. All students admitted to the Graduate Program will be expected to serve as a graduate student instructor for two semesters during the first three years. Students seeking detailed information about such matters as admission requirements and sources of financial support should go to http://mcb.berkeley.edu or contact the department by mail at Graduate Affairs Office, Department of Molecular and Cell Biology, University of California, Berkeley, 297 Life Sciences Addtion #3202, Berkeley, CA 94720-3202. E-mail: mcbgao@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 interdisciplinary participation in cancer research. The Department of Molecular and Cell Biology faculty are also members of the Cancer Research Laboratory. The central 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, molecular biology, and tumor virology. The Cancer Research Laboratory also operates five research facilities: (1) Flow Cytometry Facility for five fluorochrome staining and flow cytometric analysis; (2) Molecular Imaging Facility with two-photon microscopes for image analysis; and (3) Proteomic Mass Spectrometry Facility; (4) Immunology DNA Microarray Consortium; 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 http://biology.berkeley.edu/crl/.

The Functional Genomics Laboratory at Berkeley was established to allow Berkeley scientists to exploit profound technological advances in the field of genomics, which allow the high-throughput sequencing of entire genomes of selected model systems and the ability to survey genome-wide patterns of gene expression, now allow the dissection of biological processes at unprecedented levels of detail. In particular, this research facility provides the infrastructure, technologies, and computational resources for the performance of DNA microarray experiments, which allow the analysis of mRNA expression from tens of thousands of genes at a time. The Functional Genomics Laboratory currently possesses all the equipment necessary for conducting DNA microarray experiments, including thermal cyclers, fluidics robots, microarray printing robots, laser scanning microscopes for microarray scanning, an Affymetrix workstation and scanner, and dedicated computers for data analysis and storage of informatics databases.

The Robert D. Ogg Electron Microscope Laboratory is an instructional and research unit of the College of Letters and Science. It houses equipment for transmission electron microscopy (TEM) and scanning electron microscopy (SEM). The laboratory is dedicated to the training of undergraduate and graduate students in investigative TEM and is well equipped with the latest apparatus for the examination of biological and solid state materials. The laboratory is particularly well suited for experiments on the dynamics of condensation and nucleation, growth and rupture of ice crystals, and the role of ice crystals in the precipitation process. It is also well equipped for research on the properties of biological macromolecules, the structure and function of biological macromolecules, the logic of metabolic pathways (both degradative and synthetic) and the molecular basis of genetics and gene expression. (F.SP) Staff

C103. Bacterial Pathogenesis. (3) Three hours of lecture per week. Prerequisites: 100, 102 or consent of instructor. This course for upper division and graduate students will explore the molecular and cellular basis of bacterial pathogens. The course will focus on model microbial systems which illustrate mechanisms of 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. The course will also include some aspects of bacterial genetics and physiology, immune response to infection, and the cell biology of host-parasite interactions. Also listed as Public Health C102 and Plant Biology C103. (SP) Portnoy

C110. General Biochemistry and Molecular Biology. (4) Three hours of lecture and one hour of discussion per week. Prerequisites: 100 may not be taken concurrently). This course will emphasize the chemical and physical principles, concepts and properties involved in life processes, including enzymes and enzymatic catalysis, bioenergetics, metabolic pathways and regulation of metabolism. The chemistry, structure, function, synthesis and degradation of the constituent molecules (amino acids, fatty acids, sugars, and nucleotides) and cofactors of the major biological macromolecules. Designed for majors in the biochemistry and molecular biology, genetics and development, or immunology emphases. To be followed by 110. (F.SP) Staff

C110A. Biophysical Chemistry: Physical Principles and the Molecules of Life. (4) Chemistry 120B will re-teach material. (4) Chemistry 130A or C112B recommended. Thermodynamic and kinetic concepts applied to understanding the chemistry and structure of biomolecules (proteins, DNA, and RNA). Molecular distributions, reaction kinetics, enzyme kinetics, biophysical and physical principles, and the cell biology of microorganisms; recovery of minerals; and energy production. Staff

C112. General Microbiology. (4) Three hours of lecture and one hour of discussion per week. Prerequisites: Molecular and Cell Biology 100 or 102. Formerly 112. This course will explore the underlying 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 information analyses of microorganisms, adaptive responses, metabolic capability, and macro-molecular syntheses will be emphasized. Also listed as Plant Biology C112. (F) Ludden, Ryan, Zusman

C112L. General Microbiology Laboratory. (2) Four hours of laboratory. (L) One hour of discussion per week. Prerequisites: C112 or Molecular and Cell Biology C112 (may be taken concurrently). Experimen-tal techniques of microbiology designed to accompany the lecture in C112 and C148. The primary emphasis in the laboratory will be on the culture of microorganisms, physiological and genetic characterization of bacteria. Laboratory exercises will include the observation, enrichment, and isolation of bacteria from selected environments. Also listed as Plant Biology C112L. (F) Kustu

C113. Applied Microbiology and Biochemistry. (2) Two hours of lecture per week. Prerequisites: 112 or consent of instructor. A survey of modern developments emphasizing the application of the knowledge of molecular and cell biology to modern industrial and research. Topics include production of metabolites, enzymes, and single-cell proteins; genetic manipulation of microorganisms; recovery of minerals; and energy production. (SP) Nikaido
an emphasis on the role of dietary constituents proposed to have either toxic or protective effects in the artery wall. Readings will consist of papers from the literature. Also listed as Nutritional Sciences and Toxicology C210. (SP) Ames

210X. Foundations of Biochemistry and Molecular Biology. (4) Three hours of lecture per week. Prerequisites: Graduate standing; 100 or 112 or equivalent. Structure, function, and mechanism of gene expression from eukaryotic chromosomes. The mechanism of protein synthesis in bacteria and mammalian cells. Specific areas of interest include the structure and function of the ribosome and the regulation of protein synthesis. (F,SP) Cate

218J. Advanced 20th Century Perspectives on Cancer Cell Genetics. (2) Prerequisites: Consent of instructor. Transduction of cellular sequences and genetic 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 nonselective pores and ion channels, as well as active transport apparatus, in bacterial membranes. Nakai

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 gene expression from eukaryotic chromosomes. Kane

218P. Physical Optics and Crystallography. (2) A combination of didactic presentations and informal discussion of methods and theory in physical optics and diffraction, as applied to crystallography of biological macromolecules. Emphasis on new developments, with the development of suitable background. Glaser

218Q. Structural Biophysics. (2) Structural biology with emphasis on proteins and nucleic acids, cell membranes, cytoskeletal and motor systems, and the protein folding problem. 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 transduction of cellular sequences and genetic regulation of transformation by oncogenic retroviruses as models for natural carcinogenesis, including a critical review of the current research. Duesberg

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. Sachs

218U. Protein Folding and Stability. (2) The connection between the sequence of a protein and its three-di- mensional structure. Albert

218W. Enzyme Catalysis. (2) Fundamental aspects of enzyme catalysis, as probed by kinetic, spectroscopic, and molecular biological approaches. Kliman

218Z. Baculoviruses. (2) Prerequisites: Consent of instructor. Insect host-virus interactions at the organismal and cellular levels with emphasis on pathogene- sis, range factors, host role of the act, and the role of the act in virus infection and replication. Review of literature and discussion of original research. Volkman

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) Cate

219B. Enzyme Mechanisms. (2) Prerequisites: Consent of instructor. Enzyme mechanisms. Kirsch
31. Genes, Antibodies, and Human Populations. (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 non-majors to some important concepts of modern biology, ranging from molecules to populations. 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) Is the size of human population that the earth can sustain? (SP) Wilt

32. Introduction to Human Physiology. (3) Three hours of lecture per week. Prerequisites: One year high school or college chemistry. A comprehensive introduction to human cell biology. The course will concentrate on basic principles of human life processes, including cells and membranes; nerve and muscle 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. (SP) Wilt

32L1. Introduction to Human Physiology Laboratory 1. Three hours of laboratory per week. (SP) Wilt

84. Sophomore Seminar. Course may be repeated for credit. (2) Two hours of seminar per week per unit for fifteen weeks. and one and one half hours of seminar per week per unit for ten weeks. Three sections of seminar per week per unit for five weeks. Sections 1-2 to be graded on a pass/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 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 department to department from semester to semester. Enrollment limited to 15 sophomores. (F,SP) Upper Division Courses

130. Cell Biology. (4) Three hours of lecture and one hour of discussion per week. Prerequisites: 102 and Biology 1A. An introductory survey of cell and developmental biology. The assembly of supramolecular structures; membrane structure and function; the cell surface; cytoplasmic membranes; the cytoskeleton and cell motility; the eukaryotic genome, chromatin, and gene expression; genetic errors, 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 modern techniques, including biochemistry and molecular techniques, including DNA replication and eukaryotic cell signaling. (F,SP) Kuriyan

130U. Cell and Developmental Biology. (4) Three hours of lecture and one hour of discussion per week. Prerequisites: Consent of instructor. Enzymology of DNA repair, replication, recombination, and methylation. Linn

19F. Eukaryotic Gene Expression. (2) Prerequisites: Consent of instructor. Protein-DNA interactions and the control of gene expression in eukaryotes. Tjian

19H. Molecular and Cell Biology of Listeria monocytogenes Pathogenesis. (2) Discussion of recent research on the biology and immunology of the model facultative intracellular bacterial pathogen, Listeria monocytogenes. Portnoy

19J. 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

19N. Chemotaxis. (2) Prerequisites: Consent of instructor. Bacterial chemotaxis as a model sensory system. D. Koshland

19Q. Structural Biology of Molecular Machines. (2) Crystallographic and biochemical studies of protein machines, focused on protein-nucleic acid interactions; analysis of chemomechanical function within multimeric complexes will be covered in research reports and reviews of the current literature and in discussion of current experiments in the field. Berger

19S. Structural Biology of Signaling and Replication. (2) Mechanisms of DNA replication and eukaryotic cell signaling. (F,SP) Kuriyan

19T. Signal Transduction Mechanisms. (2) Discussion of recent research on various aspects of signal transduction mechanisms in eukaryotic cells, including G protein-coupled receptors, protein kinase cascades, synthesis and mobilization of lipid mediators, calcium sensing and response pathways, activation and inhibition of gene expression, and the biochemical basis of signal desensitization and physiological adaptation, with strong emphasis on molecular and cellular analysis of these systems, especially in the yeast Saccharomyces cerevisiae. Thormer

19U. Single Molecule Biophysics. (2) Methods of single molecule manipulation and visualization that are used to characterize the structure and mechanochromic properties of translocating DNA binding protein such as RNA polymerase and to investigate the mechanical denaturation of single protein molecules will be covered in research reports and reviews of the current literature and in discussion of current experiments in the field. Bustamante

19X. Cell Surface Glycoconjugate Interactions. (2) Investigations of cell surface glycoproteins as mediators of cell-cell interactions. Development of new methods for engineered cell surfaces. (F,SP) Bertozzi

19Y. 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. Zhou

19Z. Telomere Synthesis and Dynamics. (2) Emphasizes the replication of eukaryotic telomeric DNA. Special focus on techniques in protein biochemistry and molecular biology. Collins

Division of Cell and Developmental Biology

Lower Division Courses

Biology 1A. General Biology Lecture. (3) May be taken concurrently. 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 organismal genetics, animal development, form and function. Intended for biological sciences majors, but open to all qualified students. (F,SP) Staff

Note: Biology 1A and 1B are each taught both semesters, and students may enroll in either (but not both) during either the fall or spring semester.

Biology 1B. General Biology Lecture. (3) May be taken concurrently. Three hours of lecture and one hour of discussion per week. Prerequisites: Biology 1A. The course is designed to provide a comprehensive introduction to general biology. Topics include life cycles, cell structure and function, reproduction, genetics, evolution, and ecology. The course is intended for students majoring in biological sciences, but open to all qualified students. (F,SP) Staff

101. Principles of Biology. (4) Three hours of lecture and two hours of laboratory per week. Formerly Biology 101. Prerequisites:生物学 2 or 110A, and 3B or 110B. An introduction to the fundamental principles of biology, emphasizing the central role of molecular biology in understanding the unity and diversity of life. Topics include the structure and function of biological molecules, the flow of genetic information, the diversity of life on Earth, and the evolution of life. (F,SP) Staff

102. Biology 1A-1B. Three hours of lecture and discussion per week. Prerequisites: 101 or consent of instructor. Formerly Biology 102. An introduction to the fundamental principles of biology, emphasizing the central role of molecular biology in understanding the unity and diversity of life. Topics include the structure and function of biological molecules, the flow of genetic information, the diversity of life on Earth, and the evolution of life. (F,SP) Staff

135. Molecular Endocrinology. (3) Prerequisites: Biology 1A-1B, Chemistry 3A-3B or equivalent, or consent of instructor. Molecular mechanisms by which hormones affect specific responses and regulate gene expression. Hormone-receptor interactions, signal transduction and transport and targeting of hormones, growth factors and receptors. (Offered alternate years in the Fall.) (F) Firestone

135C. Regulation in Cells and Cell Systems. (3) Prerequisites: 130. Studies on the regulation of cell metabolism, with special emphasis on the relationships of the cell surfaces to control of intracellular activities. A comparative approach is used in uncovering regulatory mechanisms of fertilization, lymphocyte activation, cell cycles, hormonal signal transduction, cell secretion, cell-cell interactions, and cell-cell communication. Offered alternate years in the Spring. (SP) Steinhardt

135E. Physiology of Human Development. (3) Prerequisites: Biology 1A-1B. The developing human body from prenatal life to maturity: smooth and cardiac muscle 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

135G. Biology of Human Cancer. (3) Prerequisites: 102 (may be taken concurrently). Biology 1A-1B. Lectures and assigned reading on biological aspects of research, dealing with experimental and human cancers. Topics covered may include viral, chemical, and hormonal factors; tumor invasion and metastasis; immunological factors; and anti- oncogenes; and a survey of current concepts and research dealing with human cancers. (SP) Nandi

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 organic, cellular, sub-cellular and molecular levels. Comparative epidemiological and environmental aspects. Theories of aging modification and life extension. (SP) Timiras

C135V. Cell Biology of the Eye and Mechanisms of Ocular Disease. (SP) Three hours of lecture and one hour of discussion per week. Prerequisites: 130 or consent of instructor. Formerly 135V. Structure, function, regulation of ocular epithelia/neural retina in the normal and diseased state. Cell/molecular analysis of signal transduction cascades that determine lens transparency (cataract); aqueous humor inflow, outflow (glaucoma); cell adhesion, vitreous-retina (retinal detachments); photoreceptor degeneration (retinitis pigmentosa). (F)

136. Physiology. (4) Students will receive no credit for 136 if already taking an introductory biology course and one hour of discussion per week. Prerequisites: Biology 1A-1B, Physics 8A-8B. Principles of mammalian (primarily human) physiology emphasizing physical, chemical, molecular and cellular bases of functional biology. The following topics will be covered: cellular and membrane ion and non-electrolyte transport; cell and endocrine regulation; autonomic nervous system; skeletal, cardiac, and smooth muscle physiology; gastrointestinal physiology. Discussion section led by Graduate Student Instructor will review material covered in lecture. (SP) Forte, Machen

137. Computer Simulation in Biology. (4) Two hours of lecture and six hours of laboratory per week. Formerly 135L. Modeling and computer simulation of dynamic biological processes using special graphical interfaces requiring very little mathematical or computer experience. First half is realistic models from current cellular and molecular biology.
literature to teach concepts and technique; second is workshop for student-selected individual projects. (SP) Macey, Oster

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. Prerequisites: Biology 1A-1B or consent of instructor. Recommended: Chemistry 3A-3B or equivalent. Formerly 142. A survey of genetics with primary emphasis upon mechanisms of heredity and molecular genetics. Includes some treatment of evolutionary genetics. Also listed as Integrative Biology C163. (F) Beckendorf, Calendar

C148. Microbial Genomics and Genetics. (3) Three hours of lecture per week. Prerequisites: 100 or 102. Formerly Plant and Microbial Biology 116. Course emphasizes bacterial and archaeal genetics and comparative genomics. Genomic and genetic methods used to dissect metabolic and development processes in bacteria, archaea, and selected microbial eukaryotes. Genetic mechanisms integrated with genomic information to address integration and diversity 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 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. Advanced treatment of topics in cell biology. (F,SP) Staff

231. Advanced Developmental Biology. (4) Three hours of lecture and two hours of discussion per week. Prerequisites: Consent of instructor. Principles of animal development will be set forth from the classical and recent experimental analysis of induction, localization, patterning mutants, axis formation, regional gene expression, and cell interactions. Early development of selected vertebrates and invertebrates will be described. Basic experimental methods and new approaches will be presented. A weekly discussion section with readings from the research literature 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 respiration and electron transport; cell and endocrine regulation; autonomic nervous system regulation; skeletal, smooth, and cardiac muscle; cardiovascular physiology; respiration; renal physiology; gastrointestinal physiology. Discussion section will study advanced physiological topics, including: presentations by the faculty; problem sets; discussion of the primary literature and of reviews; two presentations by each student on topics in current physiological research. (SP) vertebrate physiology

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 satisfactory/unsatisfactory basis. Prerequisites: Consent of instructor. Review of current literature and discussion of original research. (SP) Forte

239A. Animal Cells and Viruses. (2) Rubin

239C. Vertebrate Development. (2) Gerhart

239D. Epithelial Function, Structure, and Regulations. (2) Machen

239E. Tumor Biology. (2) Nandi

239EE. Cell Morphogenesis. (2) (F,SP) Head

239F. Nucleocytoplasmic Transport. (2) Weis

239FF. Signal Transduction and Tumor Suppressor Genes. (2) (F,SP) Luo

239G. Photoresponses in Motility and Morphogenesis. (2) Burnside

239H. Cell Division. (2) Cande

239HH. Mechanisms of Control of Growth and Cell Proliferation. (2) Identification pathways that restrict growth and cell proliferation in vivo. (2)

239I. Cytoskeleton and Cell Motility. (2) Welch

239J. Steroid Hormone and Growth Factor Action. (2) Firestone

239K. Secretion and Cell Membrane Assembly. (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. Formerly 219P. Cell surface growth with emphasis on the unicellular eukaryote S. cerevisiae. (F,SP) Schekman

239M. Protein Secretion in Animal Cells. (2) Moore

239N. Biophysics of Cell Motility and Morphogenesis. (2) Oster

239Q. Cancer Biology. (2) Inheritance, chromatin structure, gene expression, and the organization of chromosomes in the nucleus. (F,SP) Karpen

239R. Development and Aging. (2) Timiras

239S. Regulation of Cell Polarity in Drosophila. (2) Mechanisms that establish and maintain polarity of developing cells and tissues. (F,SP) Miller

239T. Cell Regulation in Growth and Differentiation. (2) Steinhardt

239V. Cellular Transport Processes. (2) Forte

239X. The Cytoskeleton and Morphogenesis. (2) Formerly 249Z. Review of current literature and discussion of current research. (2)

239W. Leech Embryology and Development. (2) Weisblat

239X. Malignant Transformation. (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. Formerly 218G. Malignant transformation by retroviruses and the role of protein phosphorylation in growth regulation. (F,SP) Martin

239Y. Determination and Differentiation in Development. (2) Wilt

239Z. Chromosome Remodeling and Reorganization During Meiosis. (2) How chromosomes are reorganized during meiosis to accomplish the pairing, recombination, and assortment leading up to successful gamete production. (F,SP) Green

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: Final exam required. Corequisite: Genetics 102. Three hours of lecture and two hours of discussion per week. Prerequisites: Primarily for students not majoring in the biological sciences. Basic genetic principles and mechanisms, evolution, philosophical implications, and relation of genetics to global problems of human and environmental health. Also listed as Plant Biology C41X. (SP) Freeling

Upper Division Courses

140. General Genetics. (4) Students will receive 1 unit of credit after taking 142. Three hours of lecture and one hour of discussion per week. Prerequisites: 100 is required and either 110 (which may be taken concurrently) or consent of instructor. In-depth introduction to genetics, including mechanisms of inheritance; gene transmission and recombination; transposable DNA elements; gene structure, function, and 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

142. Survey of General Genetics. (4) Not open to students with credit in 140 or 141 unless 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 Genetics 102. A survey of genetics with primary emphasis upon mechanisms of heredity and molecular genetics. Includes some treatment of evolutionary genetics. (F) Beckendorf

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++; 100, 102, or equivalent; or consent of instructor. Instruction and discussion of topics in computational biology. Working from evolutionary concepts, the course will cover principles and application of molecular sequence comparison, genome annotation, and functional genomics. Also listed as Bioengineering C146 and Plant Biology C146. (SP) Brenner, Eisen

Graduate Courses

240. Advanced Genetic Analysis. (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 development. Some exams may be given in the evening. Courses 140 and 241 are taught concurrently. Students enrolled in 241 will also be required to participate in a one-hour special discussion section 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 or 140 or consent of instructor. Principles of modern and classical molecular genetics as applied to eukaryotic organisms, including yeast, nematodes, Drosophila, mice and humans; isolation and analysis of mutations; gene expression and suppression; analysis of genetic control of gene expression; and developmental genetic mechanisms. (F) 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 development. Some exams may be given in the evening. Courses 140 and 241 are taught concurrently. Students enrolled in 241 will also be required to participate in a one-hour special discussion section 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 or 140 or consent of instructor. Principles of modern and classical molecular genetics as applied to eukaryotic organisms, including yeast, nematodes, Drosophila, mice and humans; isolation and analysis of mutations; gene expression and suppression; analysis of genetic control of gene expression; and developmental genetic mechanisms. (F) Cline, Drubin, Meyer

C245. Mechanisms of Developmental Evolution. (3) Two hours of lecture and one hour of discussion per week. Prerequisites: Graduate standing with 110 or 140 or equivalent; or consent of instructor. Advanced level of coverage of current research problems in genetics. The topics covered vary from year to year. (SP)

C245. Mechanisms of Developmental Evolution. (3) Two hours of lecture and one hour of discussion per week. Prerequisites: Graduate standing with undergraduate or equivalent consent of instructor. Synthesis of modern research on genetics of developmental evolution. Topics include the origin of animals, the evolution of body plan, the role of transcriptional regulation in morphological evolution, and adaptive evolution. Also listed as Integrative Biology C262. (SP) King, Levine, Patel

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,
254. Immunobiology of Tumors. (2) Course may be repeated for credit with consent of instructor. Two hours of lecture per week. Prerequisites: Prerequisites: 250. Formerly Microbiology 233. Recent advances in tumor immunology, with emphasis on issues addressing the treatment or prevention of cancer. The course will examine the application of basic research in immune regulation to more applied studies in animal models and clinical trials. Introductory lectures by instructor followed by student presentations of original literature and lectures by invited speakers engaged in translational and clinical research in tumor immunotherapy. Offered even-numbered years. (SP) Allison

257. Selected Topics in Immunology. (1-3) Course may be repeated for credit with the possibility of one to two hours of discussion per week, with units to be assigned based on contact hours. Must be taken on a satisfactory/unsatisfactory basis. Prerequisites: Consent of instructor. Course will cover varied topics in immunology including recent literature or special subjects in greater detail. The extensive reading list will vary with topics. (F,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. Course will review current literature and discussion of original research. (F,SP) Kaufman

259A. Differentiation of T lymphocytes. (2) Molecular and biological analysis of T cell differentiation, with particular emphasis on the T cell antigen receptor and related structures. (SP) Allison

259B. Specificity of T lymphocytes. (2) Molecular basis of antigen recognition function of T lymphocytes. (SP) Shastri

259E. Regulation of T Cell Receptor Genes Expression. (2) Molecular biology of T cell receptor genes and their transcription controlling, with emphasis on programmed cell death during thymocyte differentiation. (SP) Winoto

259F. Antigen Receptor Repertoire of T Lymphocytes. (2) Molecular and biological basis for development of antigen/MHC repertoire. (SP) Ruellet

259G. T Cell Development. (2) Molecular and cellular aspects of thymocyte differentiation. (SP) Sha

259H. B Cell Differentiation. (2) Molecular basis of terminal B cell differentiation. Role of transcription factors in B cell activation. (SP) Sha

259I. Regulation of Lymphocyte Development. (2) Molecular mechanisms involved in the synergistic relationship between V(D)J recombination and lymphocyte development/function. (SP) Schissel

256J. 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 by viruses to counteract the pressure of the immune system. (SP) Robert

257. Selected Topics in Immunology. (1-3) Course may be repeated for credit with the possibility of one to two hours of discussion per week, with units to be assigned based on contact hours. Must be taken on a satisfactory/unsatisfactory basis. Prerequisites: Consent of instructor. Course will cover varied topics in immunology including recent literature or special subjects in greater detail. The extensive reading list will vary with topics. (F,SP) Staff

Division of Neurobiology

Lower Division Courses

61. Brain, Mind, and Behavior. (3) Two hours of lecture and one hour of discussion per week. Introduction to human brain mechanisms of sensation, movement, perception, thinking, learning, memory, and emotion in terms of anatomy, physiology, and chemistry of the nervous system in health and disease. Intended for students in the humanities and social sciences and
others not majoring in the biological sciences. (SP) Presti

62. Drugs and the Brain. (3) Students will receive no credit for 62 after 62. Two hours of lecture and one hour of mandatory discussion per week. Prerequisites: High school chemistry or Chemistry 1A, high school biology or Biology 1A. This course will introduce lower division biology and behavior of drugs such as stimulants, depressants, psychedelics, anxiolytics, antidepressants, and antipsychotics, steroids, 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. (F) Presti

64. Exploring the Brain: Introduction to Neuroscience. (3) Students will receive no credit for 64 after two hours of lecture and one hour of mandatory discussion per week. Prerequisites: High school chemistry or Chemistry 1A, high school biology or Biology 1A. This course will introduce lower division biology and behavior of drugs such as stimulants, depressants, psychedelics, anxiolytics, antidepressants, and antipsychotics, steroids, 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. (F) Presti
98. Supervised Independent Study. (1-4) Course may be repeated for credit. One unit of credit is given for every three hours of work in the lab per week to a maximum of 4 units. Supervised research must be taken on a pass/fail basis. Prerequisites: Consent of instructor. GPA and consent of instructor, (F,SP) Staff

Upper Division Courses

190. Undergraduate Teaching of Biology 1A. (1,2) Course may be repeated for a maximum of 4 units. Conference with instructor and teaching hours as assigned per week. Prerequisites: Biology 1A, 1B, and 1C or consent of instructor. Course consists of a weekly three-hour training session that focuses on laboratory techniques, instructional aids, and problem solving, plus an additional three weekly hours in a laboratory where the UGSI is required to assist a GSI in the instruction of laboratory (answering questions, providing demonstrations, etc.). (F,SP) Staff

190. Proseminal. (1) Course may be repeated for credit. Two hours of seminar for ten weeks. Must be taken on a pass/not pass basis. Prerequisites: Consent of instructor. Formerly 119. Upper division undergraduate seminars based on particular topics from current molecular and cellular biological literature. Four to six sections offered per semester. Consent of instructor. (F,SP) Staff

190E. Honors Research. (1-4) Laboratory research and conferences. Must be taken on a pass/not pass basis. 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 from semester to semester. (F,SP) Staff

190. Microbiology. (1) 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 from semester to semester. (F,SP) Staff

190. Genetics and Development. (1) 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 from semester to semester. (F,SP) Staff

190D. Immunology. (1) 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 from semester to semester. (F,SP) Staff

190E. Neurobiology. (1) 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 from semester to semester. (F,SP) Staff

191A. Biochemistry and Molecular Biology. (1) Course may be repeated for credit as topic varies. Two to four hours of lecture 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 from semester to semester. (F,SP) Staff

191B. Cell and Developmental Biology. (1-4) Course may be repeated for credit as topic varies. Two to four hours of lecture 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 from semester to semester. (F,SP) Staff

191C. Genetics and Development. (2-4) Course may be repeated for credit as topic varies. Two to four hours of lecture 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 from semester to semester. (F,SP) Staff

191D. Immunology. (2-4) Course may be repeated for credit as topic varies. Two to four hours of lecture 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 from semester to semester. (F,SP) Staff

191E. Neurobiology. (2-4) Course may be repeated for credit as topic varies. Two to four hours of lecture 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 from semester to semester. (F,SP) Staff

290. Graduate Seminar. (1) Course may be repeated for credit. One to two hours of seminar per week. Prerequisites: Consent of instructor. Graduate students in the department or consent of instructor. Graduate student presentations on selected research topics in molecular and cellular biology. Several sections covering different topics offered per semester. Each section limited to 12 students. One section enrollment in more than one section is permitted. List of topics to be announced before each semester. (F,SP) Staff

201A. Introduction to Research. (2-12) Laboratory research, conferences. Credit and grade to be awarded on completion of sequence. Prerequisites: Consent of instructor. Closely supervised experimental work under the direction of an individual faculty member; an introduction to experimental methods and research approaches in particular areas of molecular and cellular biology. (F,SP) Staff
themselves for the various examinations required for candidates for the Ph.D. (F,SP) Staff

Professional Courses

380. Teaching of Molecular and Cell Biology, (1-2) Course may be repeated for a maximum of 4 units. Weekly conference with instructor and teaching hours as assigned. Must be taken on a satisfactory/unsatisfactory basis. Prerequisites: Consent of instructor. Teaching laboratories and/or discussions for Molecular and Cell Biology courses; analysis of specific format and problems. Two units of credit for those with 50% teaching appointment; one unit of credit for those with 25% teaching appointment. (F,SP) Staff

481. Instrumentation in Molecular and Cell Biology. 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) Candee

481C. Scanning Electron Microscopy. (1-4) Prerequisites: Graduate standing; consent of instructor and sponsorship of a faculty member. (F,SP) Candee

481E. Principles and Operation of the Light Microscope. (1-4) Prerequisites: Graduate standing; consent of instructor and sponsorship of a faculty member. (F,SP) 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. 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

Graduate Courses

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 and Cell Biology.

Molecular Toxicology

(College of Letters and Science)

Department Office: Morgan Hall, (510) 643-2863 http://moltox.berkeley.edu
Chair: Leonard Bjejdaj, Ph.D.

Professors

Bhupat Amre, Ph.D. (Molecular and Cellular Biology)
Leonard Bjejdaj, Ph.D. (Nutritional Sciences and Toxicology)
Gladys Block, Ph.D. (Public Health)
John Casida, Ph.D. (Environmental Science, Policy and Management, Nutritional Sciences and Toxicology)
Berto DelLumen, Ph.D. (Nutritional Sciences and Toxicology)
Brenda Ekenazi, Ph.D. (Public Health)
Gary Firestone, Ph.D. (Molecular and Cell Biology)
Tyrone Hayes, Ph.D. (Integrative Biology)
Isao Kudo, Ph.D. (Environmental Science, Policy and Management, Nutritional Sciences and Toxicology)
Stuart Lim, Ph.D. (Molecular and Cell Biology)
Mary Lou Lack, Ph.D. (Molecular and Cell Biology)
Joseph Napoli, Ph.D. (Nutritional Sciences and Toxicology)
Kathleen Peters, Ph.D. (Chemistry)
Barry Shane, Ph.D. (Nutritional Sciences and Toxicology)
Alan Smith, Ph.D. (Public Health)
Martin Smith, Ph.D. (Public Health)
Garrison Sposito, Ph.D. (Environmental Science, Policy, and Management)
Norman Terry, Ph.D. (Plant and Microbial Biology)
Fernando Viten, Ph.D. (Nutritional Sciences and Toxicology)

Associate Professors

Fennyong Liu, Ph. D. (Public Health)
Sheng Luan, Ph. D. (Plant & Microbial Biology)
Chris Vulpe, Ph.D. (Nutritional Sciences and Toxicology)

Adjunct Professors

Mina Bissell, Ph.D. (Lawrence Berkeley National Laboratory)
Donald Weston, Ph.D. (Integrative Biology)

Program Overview

The Graduate Group in Molecular Toxicology offers a degree program that focuses on the adverse effects of chemicals on living organisms and how these effects are modulated by genetic, physiologic, and environmental factors. The Molecular Toxicology program provides a significant service by performing research; providing education and training on biological, biochemical, and genetic aspects of the field; and by producing graduates who will meet the growing societal needs in toxicology resulting from the development of modern technology. The multidisciplinary nature of the program encourages students to pursue their individual research interests and collaborate with faculty from a variety of fields. The group’s faculty come from a variety of units at Berkeley, including Chemistry, Integrative Biology, Molecular and Cell Biology, Nutritional Sciences and Toxicology, and Public Health, and staff from the Lawrence Berkeley National Laboratory. For admission to the Ph.D. program, a bachelor’s degree in the biological or chemical sciences is recommended to provide the necessary basic preparation for the program. Candidates for the Ph.D. degree are required to complete a sequence of core graduate toxicology courses and the Ph.D. oral qualifying examination. In addition, all students in the group gain experience in teaching through their service as graduate student instructors. Students seeking further information concerning matters such as curricula, admission, and financial support should consult the Molecular Toxicology web site at http://moltox.berkeley.edu.

Music

(College of Letters and Science)

Department Office: 104 Morrison Hall, (510) 642-2678 http://LS.Berkeley.edu/dept/music
Chair: Anthony Newcomb, Ph.D.

Professors

Wye J. Allenbrook, Ph.D. Stanford University, Late 19th-century music
Mary Kay Dugger, Ph.D. University of California, History of book, music and technology
Joseyline Guilbaut, Ph.D. University of Michigan, Caribbean music, popular music, musical cultures
Jorge Liderman, Ph.D. University of Chicago, Composition, analysis, theory
Davit Moroney, Ph.D. University of California, Berkeley Baroque period, performance practice, harpsichord, organ
Anthony Newcomb (Gladys Krazy Tenor Chair), Ph.D. Princeton University; Italian madrigal, 19th-century music
John Roberts, Ph.D. University of California, Berkeley Handel, 19th-century opera
Richard Taruskin (Class of 1955 Chair), Ph.D. Columbia University, Renaissance period, Russian music, Stravinsky
John Thow, Ph.D. Harvard University, Composition, 20th-century music
Beverly C. Wade (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 perception
Richard L. Crocker, Ph.D. (Emeritus)
Alan Curtis, Ph.D. (Emeritus)
Edwin Dugger, Ph.D. (Emeritus)
Richard Feliciano, Ph.D. (Emeritus)
Daniel Heurtley, Ph.D. (Emeritus)
Andrew W. Imbrie, M.A. (Emeritus)
Joseph Kerman, Ph.D. (Emeritus)
Lawrence H. Moe, Ph.D. (Emeritus)
Michael Senturia, A.B. (Emeritus)
Oly Wilson, Ph.D. (Emeritus)

Associate Professors

Katherine Bergin, Ph.D. Cornell University, Cultural criticism, comparative musicology
Benjamin Brinner, Ph.D. University of California, Berkeley Ethnomusicology, Indonesian music, Middle Eastern music
Edmund Campion, D.M.A. Columbia University, Composition, computer music
Cindy Cox, D.M.A. Indiana University, Composition

Marika Kuzma (Virginia Chan Lew Chair in Music), Ph.D. Indiana University, Director, University choirs; choral conducting
David Milnes, D.M.A. Yale University, Director, University Symphony; orchestral conducting technique
Mary Arin Smart, Ph.D. Coe College, 19th-century opera, music and gender
Kate van Orden, Ph.D. University of Chicago, French Renaissance, modernism

Assistant Professor

Myra Melford, B.A. Evergreen State College. Improvisation, jazz

Senior Lecturers

Christy Dana, D.M.A. (Musicianship, jazz)
Jennifer Rosenak, Ph.D. (Musicianship)
Elizabeth Davidson, M.A. (Emerita)
John M. Swickhamer, A.B. (Emeritus)

Lecturers

David Abel (Violin)
Virginia Baker (Violin)
Deborah Benedict, M.A. (Voice)
Louise Bidwell (Piano)
Bemeth Bohlin (Baroque violin)
Charlene Brender, M.M. (Harp)
Robert Cattin, M.A. (Wind ensemble)
Jacqueline Chew, M.M. (Piano)
Natalie Cox, B.A. (Harp)
Jeff Davis, M.M. (Cello)
Anna Carol Dudley, M.A. (Voice)
Leighton Fong, M.M. (Violoncello)
Rodney Gehrie, M.A. (Organ)
Dane Goldberg, M.M. (Guitar)
Michael Goldberg, M.M. (Guitar)
David Granger, M.A. (Flute)
Susan Gundunas, B.A. (Viola)
Eric Hansen, M.A. (Violin)
Heather Haughton, M.A. (Violin)
Silvester Henderson, M.A. (Gospel choir)
MacDowell Kerley, D.M.A. (Trombone)
C.K. Ladesko, Ph.D. (African drum)
Janet Maestre, B.Mus. (Flute)
Anthony Martin, M.M. (Baritone)
Robin May, LL.B. (Oboe)
Laurie McGraw, M.A. (Trumpet)
Julie McKenzie, B.M. (Flute)
Emma Moon (Flute)
Michael Orland, A.B. (Piano)
David Pereira, Ph.D. (Harmony)
Allen Pollack, Ph.D. (Clarinet)
Sarah Ratcliffe, M.M. (Oboe)
Elizabeth Reed, M.A. (Violin, viola da gamba)
Vyna Resett, L.R.A.M. (Voice)
Ellen Ruth Rose, M.M. (Viola)
Irene Sharp, B.F.A. (Cello)
Allen Shearer, Ph.D. (Voice)
Benjamin Simon, M.M. (Violino)
Mariko Smiley, M.M. (Violin)
Julie Steinberg (Piano)
David Taylor, Ph.D. (Piano)
Peter Wahrhaftig, B.M. (Tuba)
Liang Wang, M.M. (Oboe)
Robert Ward, B.M. (Horn)
Martha Wasley, A.B. (Violin)
William Wainart, M.F.A. (Percussion)
Stina Young (Cello)
Betty Wto, D.M.A. (Piano)
Richard Wom, M.M. (String bass)

Student Affairs Officer and Transfer Adviser: Mr. Alexander.

Major Advisers: Department faculty by assignment in Music 49A.

Minor Adviser: Ms. Dana.

Graduate Advisers: Composition, Mr. Thow; History and Literature, Ms. Smiley, Ethnomusicology, Ms. Guibault.

Department Overview

The Department of Music fosters the cultivation of music on campus through undergraduate and graduate programs of study, and also public concerts and lectures in Hertz Memorial Hall, Morrison Music Building, and elsewhere. For undergraduates the department offers a major in music, as well as numerous nonmajor courses for the student with little or no previous experience in music. A minor in music draws courses on either majors or nonmajors, depending on the student's major program. For graduate students the department offers programs leading to the M.A. and Ph.D. degrees in musical composition and in research. The department's theory courses provide an introduction to the materials of musical composition through ear training, harmony, counterpoint, and
analysis. The history and literature courses present a survey of Western music and detailed study of the chief periods of its development. Courses in ethnomusicology provide study of specific areas of world music, both in survey and in depth, and also provide an introduction to the principles and methods of research. Courses in performance (including orchestra, chorus, and various ensembles) offer the opportunity to perform a varied repertory, and are open by audition to all students and to auditors. All students who wish either to audit or to enroll in performance courses should consult the department web site for information on audition appointments: music.berkeley.edu/performance.

Students who plan to major in music or take any of the courses designed primarily for music majors (40-79, 150-189) must complete the Music Placement Procedure, which is offered each semester in the week before instruction begins. Go to http://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

Majors start in their program with Music 49, an introductory course that combines critical listening (49A) with musicianship (49B) and harmony (49C). At this time, students will be assigned an adviser who will help them in planning their program in future semesters. Students who place out of 49B or 49C must still take 49A at the beginning of their program.

**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-150B-150C-150D. 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, musical theater, improvisation, theory and analysis, cognitive science, and music technology. At least every semester, students will see 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 course work for one or two semesters. Application forms with more details may 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: 26A 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-point average 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. and Ph.D. degrees in composition and scholarship, the latter with options in the history and literature of Western music and ethnomusicology (not 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. Fundamentals of music, including notation, sight singing, ear training, and beginning linear analysis. For general students. (F,SP)

23. Music Culture and the Digital Multimedia Environment. (3) Two hours of lecture and one hour of laboratory per week. Prerequisites: Reading knowledge of music, basic familiarity with computers and the web. Survey of music cultures in a digital multimedia environment of performance, composition, and listening. Analysis of music resources on the web. Use of software for design of web sites, creation and manipulation of music as sound and notation in MIDI and other digital formats. Includes discussion of digital composition and performance, music copyright, music sound and print publishing, and music in conjunction with digital images, with occasional guest lectures. Focus on music culture varies.

24. Freshman Seminar. (1) Course may be repeated for credit as topic varies. One hour of seminar per week. 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-group 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-25B. Introduction to Music Theory. (3,3) Three hours of lecture per week. Prerequisites: 20A or other basic musicianship course or consent of instructor. A writing course based on traditional harmony. Beginning linear and vertical analysis. For general students. Emphasis on written exercises.

26AC. Music in American Culture. (4) Two hours of lecture, one hour of discussion, and one hour of listening per week. Two perspectives are developed: (1) diverse music of groups in America, and (2) American music as a unique phenomenon. Groups considered are African, Asian, European, Hispanic/Latino, and Native American. Lectures and musical examples are organized by topics such as music of socio-economic subgroups within large groups, survival of culture, pan-ethnicity, religious and concert music, and the folk-popular-mass continuum. This course satisfies the American cultures requirement.

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)

28. Listening to Many Musics, (4) Three hours of lecture and one hour of laboratory devoted to performance workshops and discussion. Opening ears and minds to musical sounds and the people who make them, imparting basic concepts and ways of listening in order to deepen students’ experience of music from a variety of cultures, including Western, Middle Eastern, and Southeast Asian traditions (specific traditions may vary depending on instructor). While the emphasis is on listening, students will become physically involved through hands-on workshops.

30. 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: Prior screening of 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. Group Lessons. (1) May be repeated once for credit. Course may be repeated for a maximum of 2 units. One hour of laboratory 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 chosen instrument. Group classes to focus on voice, strings, winds, and piano. (F,SP) Staff

49A. Thinking about Music. (2) Two hours of lecture per week. Prerequisites: Department placement exam; 49B-49C (to be taken concurrently). Introduces prospective music majors to basic forms and genres of many musics, drawn from the repertories of Western Europe, America, 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. 49A-49B-49C. Two hours of lecture, one hour of laboratory per week. Prerequisites: Music Placement Examination. Formerly 60A. Diatonic sight singing, ear training, and keyboard harmony. (F,SP)

49C. Harmony. (3) Three hours of lecture per week. Prerequisites: Music Placement Examination. Formerly 60A. 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 Music 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 chromaticism. (F,SP) Staff

50M. African American Music. (3) Three hours of lecture per week. Prerequisites: Musicianship. Formerly 50M.ural 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

96. Directed Group Study for Freshmen and Sophomores. (1-4) Course may be repeated for credit. Two contact hours per unit per week. Must be taken on a pass/no pass basis. Prerequisites: Lower division standing and consent of instructor. Group study in a field that may not coincide with that of any regular course. See the Introduction to Courses and Curricula section of the General Catalog for enrollment restrictions. (F,SP) Staff

128AM. Opera. (4) Students will not receive credit for 128AM after taking 128A. Three hours of lecture per week. Prerequisites: 61B, and 75G. Restricted to music majors. A study of musical and dramatic aspects of opera. Lectures on selected operas will be supplemented by assigned recordings and films or videotapes of notable performances. Analytical studies and a term paper required.

128B. Beethoven. (3) Three hours of lecture per week. Prerequisites: 27 or consent of instructor. Emphasis on the symphonies.

128C. Contemporary Music. (3) Three hours of lecture per week. Prerequisites: 27 or consent of instructor. Twentieth-century music, from Stravinsky to the present.

128D. J. S. Bach. (3) Three hours of lecture per week. Prerequisites: 27 or consent of instructor.

128E. Mozart and Haydn. (3) Three hours of lecture per week. Prerequisites: 27 or consent of instructor.

129. 19th- and 20th-Century Symphonic Literature. (3) Three hours of lecture per week. Prerequisites: 27 or consent of instructor. Survey of principal lit- erature, by Russian composers from Prokofiev to Shostakovich.

129H. 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.

129L. Russian Music. (3) Three hours of lecture per week. Prerequisites: 27 or consent of instructor. Survey of principal literature, by Russian composers from Prokofiev to Shostakovich.

129Q. The European/American Art Song. (3) Three hours of lecture per week. Prerequisites: 27 or consent of instructor. A study of song and the interaction of poetry and music, from late 18th through the 20th cen- tury, with texts in English, German, French, and Rus- sian in translation. Music by composers ranging from Mozart and Schubert to Gershwin and Bernstein will be included, with occasional live performances by local artists.

129R. History of Jazz in America. (3) Three hours of lecture per week. Prerequisites: 27 or equivalent or consent of instructor. A survey of jazz music from the 1920’s through the 1980’s covering the major stylistic trends including the New Orleans and Chicago styles of the 1920’s, big band jazz, bebop, hardbop, free jazz, fusion, and neo-classicism. Major innovators to be studied include Louis Armstrong, Duke Ellin- gton, Lester Young, Billie Holiday, Charlie Parker, Th- elonious Monk, Miles Davis, John Coltrane, and Or- nette Coleman.

129RM. History of Jazz in America. (3) Three hours of lecture per week. Prerequisites: 27 or equivalent or consent of instructor. A survey of jazz music from the 1920’s through the 1980’s covering the major stylistic trends including the New Orleans and Chicago styles of the 1920’s, big band jazz, bebop, hardbop, free jazz, fusion, and neo-classicism. Major innovators to be studied include Louis Armstrong, Duke Elling- ton, Lester Young, Billie Holiday, Charlie Parker, Th- elonious Monk, Miles Davis, John Coltrane, and Or- nette Coleman. Satisfies music major elective requirement.

129S. History of Opera 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.

130B. African American Music. (3) Three hours of lecture per week. Historical and analytical study of African-American music in the 20th-century. Emphases on the evolution of jazz and various popular and art forms. Must be taken for credit. May be repeated for credit. Three hours of public performance per week. Surveys the forms of different world cultures. The particular culture to be studied will vary.

139A. Topics in Music of the World. (3) Course may be repeated for credit. Three hours of lecture per week. Surveys the music of different world cultures. The particular culture to be studied will vary.

139A. Topics in Music of the World. (3) Course may be repeated for credit. Three hours of lecture per week. Surveys the music of different world cultures. The particular culture to be studied will vary.

140. Javanese Gamelan. (2) Course may be repeated for credit. Four hours of rehearsal per week. Prerequisites: Audition. May be taken for credit or audited. (F,SP) Milnes

141. University Symphony Orchestra. (2) Course may be repeated for credit. Four hours of rehearsal per week. Prerequisites: Audition. A performing course for the study and practice of standard orchestral repertoire. (SP) Calonico

143. Gospel Chorus. (2) Course may be repeated for credit. Three hours of large ensemble and one hour of section rehearsal per week. 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 one of the campus professional 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 African American Studies C145. (F,SP) Henderson

144. University Chorus. (2) Course may be repeated for credit. Three hours of rehearsal and one hour of sectional rehearsal per week. Prerequisites: Audition. The University Chorus performs music from the 17th to the 20th centuries including works for chorus and orchestra. (F,SP) Kuzma

145. University Choral 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 repertoire. (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 three or more voices required. Group discussion and analysis. (SP) Kuzma

147. Contemporary Chamber Music Ensemble. (2) Course may be repeated for credit. Four hours of rehearsal per week. Prerequisites: Audition. A group organized to perform and study compositions representing recent developments in music.

148. African Music Ensemble. (2) Course may be repeated for credit. Four hours of rehearsal per week. Performance of West African music with particular emphasis on the music of Ghana. Practical instruction in traditional instrumental and vocal techniques. (F,SP) Staff

149. University Baroque Ensemble. (2) Course may be repeated for credit. Four hours of rehearsal per week. Performance of Renaissance and Baroque music for voices and instruments.

150. Advanced Vocal and Instrumental Instruction. (1) One hour of laboratory per week. May be repeated for credit if student maintains 'B' average. Prerequisites: Restricted to music majors by audition. Advanced private instruction in keyboard, stringed, wood, brass, and percussion instruments and in voice.

150A. Instrumental Performance. (3) Course may be repeated for credit. Three hours of public performance per week. Prerequisites: Music majors only. Audition for experienced vocalists. A comprehensive program of vocal studies including participation in University Choruses, vocal technique training, and ensemble work with other instrumentalists or vocalists. 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) Kuzma

150C. Keyboard and Guitar Performance. (2,3) Course may be repeated for credit. Must be taken for a letter grade. Four hours of studio per week. Prerequisites: Music major only. By audition, for experienced performers of keyboard, guitar, or related instruments. The program will include ensemble work, such as vocal accompaniment and/or chamber music with other instrumentalists, 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

150D. Various Musical Practices Performance. (3) Course may be repeated for credit. Must be taken for a letter grade. Four hours of studio per week. Prerequisites: Music major only. By audition, Intermediate or advanced instruction in musical practices not encompassed in 150A-150B-150C, within the context of a directed academic program of studies. Students must have experience on the instrument or have studied it in the 130 series. 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) Brinner

151. Twentieth-Century Harmony. (3) Three hours of lecture per week. Prerequisites: Advanced placement in Harmony Placement Examination or 61. Formerly 61B. Advanced chromatic harmony, early 20th-century harmony, and analytic studies. Emphasis on written exercises.

152. Advanced Musicianship. (3) Three hours of class per week. Prerequisites: 51, 61, and 405D. Continuation of the skills acquired in prerequisite courses, with an 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 practices. (F,SP) Staff

154A. Counterpoint. (3) Three hours of lecture per week. Prerequisites: 61; 151 recommended. A 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; 151 recommended. A study of 18th-century counterpoint. Regular exercises required. Analysis of chorale preludes, two-and-three part inventions, canons, and fuge exercises. (SP) Staff

155. Music Composition. (3) Course may be repeated for credit. Three hours of lecture per week. Prerequisites: 61; 151 and 154A-154B recommended. A study of formal problems using contemporary composition techniques. (F,SP) Staff

156. Studies in Musical Analysis. (3) Three hours of lecture per week. Prerequisites: 156 recommended. The study of a variety of analytical techniques and their application to important works of music.

157A-157B. Orchestration. (3,3) Three hours of lecture plus considerable out of class work including some special workshop sections. Prerequisites: 61; 151 recommended. Formerly 157. A study of orchestration— the construction capabilities and idiomatic qualities of all of the individual instruments which comprise the contemporary symphony orchestra followed by a study of the 18th-, 19th-, and 20th-century or-
220. Topics in Music History and Criticism. (4) Course may be repeated for credit. Three hours of seminar per week. Specialized course in musical criticism. The topic will change each time the course is offered.

229. Seminar: Popular Music and Popular Culture. (4) Three hours of seminar per week. Problems in the analysis of popular music as culture and subculture. Focus on America, though consideration may also be given to other parts of the world. Readings in cultural studies and music criticism. Ethnographic projects.

240. Historical Readings in Ethnomusicology. (4) Three hours of seminar per week. Formerly 230. Critical analysis of historical sources for ethnomusicological 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.

243. Transcription and Analysis in Ethnomusicology. (4) Three hours of seminar per week. Formerly 234. Methods and practice of transcription applied to selected musical practices in relation to specific analytical goals. Coursework includes use of software for sound analysis and notation.

244A. Tools of Ethnomusicological 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 theories 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. Three hours of seminar per week. Formerly 248B. A highly specialized course focusing on aspects of music in Asia. The topic will change each time the course is offered.

248B. Topics in Caribbean Music. (4) Course may be repeated for credit. Three hours of lecture per week. A highly specialized course in ethnomusicology focusing on selected musical practices from the Caribbean.

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 the multiple disciplines informing the study of music. The selection of theoretical writings will change each time the course is offered.

290. Colloquium. (1) Course may be repeated for credit. About five meetings per semester. Must be taken on a satisfactory/unsatisfactory basis. Meetings for the presentation of original work by faculty, visiting lecturers, and advanced graduate students. Assigned readings. In rotation members of the class will be appointed as respondents for the papers.

296. Group Special Studies. (2-6) Course may be repeated for credit. Meetings 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)

299. Special Study. (2-12) Course may be repeated for credit. Meetings 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)

301. 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. Meetings 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)

302. Individual Study for Doctoral Students. (1-8) Course may be repeated for credit. Course does not satisfy unit or residence requirements for doctoral degree. Meetings 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 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 for Teaching Assistants in Music. (2-4) Course may be repeated for credit. Three hours of seminar per week. Formerly 233. Staff

405C-405D. Elementary Piano. (1) Course may be repeated for credit. One hour of studio per week. Must be taken on a passed/not passed basis. Prerequisites: For music majors only. Two semesters are strongly recommended for music majors who lack the basic keyboard skills needed for musicianship and harmony classes. (F,SP) Staff

405C-405D. Piano Laboratory. (1) Course may be repeated for credit. One hour of class per week. Must be taken on a passed/not passed basis. Prerequisites: 405B is prerequisite to C; C is prerequisite to D; open only to majors in music. Required of music majors who do not pass the entrance examination in piano.

410. Vocal Technique. (1) Course may be repeated for credit. One hour of lecture per week. Prerequisites: Resticted 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

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 adviser who will assist in working out an appropriate course of study. Consultation with the adviser 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

The major in Native American studies consists of 12 courses for a total of 48 units.

Lower Division. Ethnic Studies 10A, 10B; Native American Studies 20A, 20B.

Upper Division. Ethnic Studies 101A, 101B, 102; Native American Studies 110; completion of three courses from Native American Studies 100, 120, 151, and 178; Native American Studies 197 (4 units cumulative).

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: The minor in Native American studies consists of five upper division courses for a total of 20 units: Ethnic Studies 101A or 101B; Native American Studies 110; completion of three
of the upper division courses listed in the major requirements (not including Native American Studies 197).

Lower Division Courses

R1A. Native American Studies Reading and Composition. (4) Three hours of lecture and one hour of writing workshop per week. Prerequisites: 1A. Formerly R1B. 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 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 R1B. 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 first half of the Reading and Composition requirement. (F) Staff

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 economic situations, between Native American peoples and the Europeans and Euro-Americans. Emphasis will be placed on how tribal peoples have responded to the impact of European invaders, with a special focus on the history of the Native American Nations of the southwestern United States. (F,SP) Staff

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 engages students in the study of Native American identity practices in written and oral traditions in literature, art, dance, theatre, ceremony, and song. The place of these traditions in the contemporary day will be emphasized as creative tools for maintaining and elaborating on Indian identity in the context of colonialism. (SP) Staff

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/failed basis. 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. Students must be enrolled on a letter-grade basis. Sections 3-4 to be graded on a pass/failed 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.

71. Native Americans in North America to 1900. (4) Three hours of lecture and one hour of discussion 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. (F) Hildén

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 the lives of Native Americans in the 20th century. Course will explore political, economic, and social/cultural developments as they shape federal-indian relations and tribal sovereignty. (SP) Hildén

84. Sophomore Seminar. (1,2) Course may be repeated for credit as topic varies. One hour of seminar per week or per unit for up to two 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/failed 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 across the campus. Sophomore seminars offer opportunity for students working closely 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. (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

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 pass/failed basis. Prerequisites: Consent of instructor. Limited to freshmen and sophomores. Supervised research by lower division students. (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 relationship between the United States government and Native American tribes, and examination of contemporary legislation, court cases, and federal, state, and local policies affecting Native American social, political, legal, and economic situations. (F,SP) Staff

101. Native American Tribal Governments. (4) Three hours of lecture per week. Prerequisites: 71, 72, or 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

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, criticism, and social sciences 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. Focused on specific art forms such as dance, music, film, crafts, and other traditions, this course provides students with a critical understanding of the role of art in contemporary Native American culture and the place of their role 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 indigenous peoples have represented themselves in the media. We will examine how Native Americans have been represented in television, film, music, and other forms of media. This course explores the ways in which Native Americans have been represented in the media and the ways in which they have responded to these representations. (F) Staff

149. Gender in Native American Society. (4) Three hours of lecture per week. Prerequisites: 71 or 72 or consent of instructor. This course examines gender roles from the period before the invasion to the present. An emphasis will be placed on the ways in which contact with European gender practices transformed those prevalent in Native North America before the conquest. (F,SP) Hernandez

150. Native American Narratives. (4) Three hours of seminar per week. Prerequisites: Junior or senior standing and completion of 1A-1B. This workshop provides intensive study of the craft of writing in relation to various Native American genres. Emphasis will be on 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 emphases on systems of knowledge, explanations of natural phenomena, and relations of human beings to nature through ritual and ceremonial observances. (SP) Hernandez

C152. Native American Literature. (4) Three hours of lecture per week. Prerequisites: 151 is recommended but not required. An analysis of the written and oral tradition developed by Native Americans. Emphasis will be placed on a multifaceted approach (aesthetic, linguistic, psychological, historical, and cultural) in examining American Indian literature. Also listed as American Studies C152.

154. Mythic Tribal Literature. (4) Three hours of lecture per week. Prerequisites: 72. Chronicles and commentaries on published texts and the problems of tribal literature in translation. The cult of cultural tribal artifacts in contrast to the verbal act of showing dreams and telling mythic tales. Perusal of historic speeches, trickster narratives, oratorical and prophetic tribal epics.

155. Native American Medicine. (4) Three hours of seminar per week. Prerequisites: 71, Anthropology 3 or consent of instructor. Medical history, traditional healing methods, and curative practices, including herbal medicines, ceremonies, and physical techniques, among Native American groups in North and South America. (F,SP) Staff

158. Native Americans and the Cinema. (4) Three hours of lecture per week. Prerequisites: 72 or consent of instructor. This course will analyze the sociological, psychological, and literary aspects of Hollywood images of “savagery” of the American Indian through the history of films. The format will include representative Indian films, lectures, and guest speakers from the movie industry. (F,SP) Staff

175. History of Native Americans in California. (4) Three hours of lecture per week. Prerequisites: 71, 72, or consent of instructor. An historical analysis of the social changes the tribes underwent as they met the challenges of the end of the 20th century. (F,SP) Staff

176. 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 social changes the tribes underwent as they met the challenges of the end of the 20th century. (F,SP) Staff

177. Plains Indian History. (4) Three hours of lecture per week. Prerequisites: 71, 72, or consent of instructor. An historical analysis of the social changes the tribes underwent as they met the challenges of the end of the 20th century. (F,SP) Staff

178. Topics in Native American History. (4) Course may be repeated for credit. Three hours of lecture and one hour of 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 through the lens of Native American historiography. (SP) Staff

178AC. Africans in Indian Country. (4) Three hours of seminar per week. This seminar will explore the in-
tersections 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 texts, first-person accounts, fiction, and primary documents from the perspective of Native American, African American, and Black-Indian scholars and writers. This course satisfies the American cultures requirement. (F.SP) Staff

182. Native American Music. (4) Three hours of lecture per week. Focuses on 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 ceremonial activities will be emphasized. The format will include lectures, aural training, and direct contact with musical performances and musicians. (F.SP) Staff

190. Seminar on Advanced Topics in Native American 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.

H195. Native American Studies Honors Course. (4) Course may be repeated for credit. Hours to be arranged. Prerequisites: Consent of instructor and upper division standing preferred. Individual conferences to be arranged. Supervised experiences relevant to specific topics in the Native American community in off-campus settings. Regular individual meetings with faculty sponsor and written reports required. (F.SP)

197. Field Work in the Native American Community. (1-3) Course may be repeated for credit as project varies. One to three hours of field work per week. Prerequisites: Consent of instructor and upper division standing preferred. Individual conferences to be arranged. Supervised experiences relevant to specific topics in the Native American community in off-campus settings. Regular individual meetings with faculty sponsor and written reports required. (F.SP)

198. Supervised Group Study. (1-3) Course may be repeated for credit as project varies. Must be taken on a passed/not passed basis. Prerequisites: Consent of the instructor and upper division standing preferred. Group discussions, research, and reporting 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 instructor, 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
http://nature.berkeley.edu
Dean: Paul Ludden, Ph.D.
Executive Associate Dean: Barbara Allen-Diaz, Ph.D.
Associate Dean of Instruction and Student Affairs: Lynn Kinkel
Associate Dean of Academic Affairs: Lewis Feldman, Ph.D.
Assistant Dean of Instruction and Student Affairs: Monica Lin

Overview
The College of Natural Resources generates and integrates knowledge in the biological, physical, and social sciences in order to support the development of a mutually beneficial and sustainable relationship between people and the environment. Teaching, research, and extension focused on environment and human welfare are important parts of the college mission. Topics of research and teaching include watershed, oak woodland, and forest ecology, restoration, and management; food safety, nutrition, biotechnology, microbial biology, genomics, and emerging diseases; bioethics, environmental justice, international development, public policy, and economics; agriculture, conservation, and land use change; biogeochemistry, atmospheric science, and climate change. College faculty evaluate the complex interactions between the natural environment and society and recommend policies that will meet fundamental human needs. Among the college’s research areas are: climate change (B.S.), population biology (B.S.), and rural sociology; teaching at high school and university levels; veterinary medicine; public service; and professional natural resource management. Students of the college may prepare for graduate education in any of these and many other fields.

The college has four departments. Agriculture and Natural Resources provides a basic foundation in economics and policy analysis, as applied to the conservation and management of natural and environmental resources. Environmental Science Policy (EEP) is a three-year program in both the College of Natural Resources and the College of Environmental Design that prepares students for careers like forestry and dietetics. Some majors provide a foundation in sciences that prepare 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. Programs in the college will offer a new major in environmental social sciences, called “society and environment,” in the next few years. For more information about the majors, contact the Office of Undergraduate Admissions at 245 Mulford Hall, or e-mail cnrteaching@nature.berkeley.edu if you need further advice or assistance.

Transferring into the College
Transferring into the College from Other Berkeley Colleges and Schools
Current UC Berkeley students in good academic standing are welcome to apply for transfer into a major in the College of Natural Resources at any time during the year. Visit the web sites for our majors to find out if a College of Natural Resources program meets your needs, or send e-mail to cnrteaching@nature.berkeley.edu for more information or referral to the major adviser.

If you decide to transfer into the college, complete a Petition to Change College or Major and, if the undergraduate major adviser requests it, the relevant major application. Both of these forms are available at the Office of Student Affairs, 245 Mulford Hall. Visit the web sites for both the College of Natural Resources and your current college, and from the registrar at 120 Sproul Hall. You may also download forms from http://nature.berkeley.edu. If you are accepted, you will receive written notification from the College of Natural Resources and will be eligible for transfer immediately.

Transferring into the College of Natural Resources from Off-Campus Schools and Programs
The College of Natural Resources welcomes transfer applicants to each of its undergraduate majors. Priority for admission is given to students with excellent preparation for a major, as transfer students are not admitted into undeclared status.

Prospective transfer applicants should carefully follow the requirements for transfer applicants to the web at http://nature.berkeley.edu, and on ASSIST.org. Juniors wishing to transfer into CNR should also contact the adviser for the major in which they are interested to help determine whether they have met the appropriate prerequisite course requirements and to discuss their options. In some majors, IGETC can be used to meet breadth requirements. Send e-mail to cnrteaching@nature.berkeley.edu for referral to a major adviser or for general advice or assistance.

Undergraduate Majors
Since its origin as one of the cornerstones of the University of California, the College of Natural Resources has developed multidisciplinary programs that encompass the physical, biological, and social sciences, with a strong commitment to undergraduate teaching. The college is well known for its ability to provide individual focus and attention through faculty advising, small class size, and dedicated faculty. 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. Programs in the college will offer a new major in environmental social sciences, called “society and environment,” in the next few years. For more information about the majors, contact the Office of Undergraduate Admissions at 245 Mulford Hall, or e-mail cnrteaching@nature.berkeley.edu if you need further advice or assistance.

Conservation and Resource Studies (CRS) is ideal for highly motivated students seeking an individualized program. Students work with faculty to develop a unique area of study focused on environmental problems requiring cross-disciplinary approaches. (Offered by the Department of Environmental Science, Policy, and Management.) 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, and conflicts between economic development and environmental quality, and how such conflicts can be resolved. (Offered by the Department of Agricultural and Resource Economics.)

Environmental Sciences (ES) is a college-level major to which they have applied. The program has 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 physical and environmental factors on all scales, from local to global. The major culminates with a senior research project.

Offered by the Environmental Sciences Program (ESP): http://esp.m.berkeley.edu/

Forestry and Natural Resources (FNR) is the result of a merger of the former majors in forestry and 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, recreation, and land use and natural resource issues. Geographical information systems, and rural sociology are available. This major prepares students for graduate school and careers in environmental consulting, public agencies, non-profit 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): http://esp.m.berkeley.edu/

Genetics and Plant Biology (GBP) combines traditional plant sciences—physiology, biology, and anatomy—with newer biological disciplines such as genomics, bioinformatics, and biotechnology 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 an understanding of molecular, genetic, and agricultural biotechnology. Offered by the Department of Plant and Molecular Biology (PMB): http://pmb.berkeley.edu/

Microbial Biology (MB) is for students interested in research 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 pursuing postgraduate education in biology, and for students interested in entering the secondary school level. Offered by the Department of Plant and Molecular Biology (PMB): http://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 biological area, as well as students interested in general biology. Offered by the Department of Environmental Science, Policy, and Management (ESPM): http://esp.m.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 Sciences and Toxicology (NST): http://must.berkeley.edu/

Nutritional Sciences (NS) has three areas of specialization: Physiology and Metabolism, Diets and Toxicology, Physiology and Metabolism combines a foundation in natural sciences with advanced course work in nutrition, the study of nutrient utilization, and food science. Diets and Toxicology students at the junior and senior levels take course work emphasizing nutrition and the application of this knowledge through dietician practice and better eats. This program provides students with a strong background in the biological and chemical sciences with advanced course work focusing on nutrition and toxicology, the biochemical and physiological study of the adverse effects of nutrients in the diet. Offered by the Department of Nutritional Sciences and Toxicology (NST): http://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, 245 Mulford Hall, Berkeley, CA 94720-3100. For further information, call the Office of Instruction and Student Affairs at (510) 642-0542, go to http://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 sciences (Dept. of NS&T), and toxicology (Dept. of NS&T). For more 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 employment verification form on file, or (2) authorization from the dean's office. The minimum course load is 13 units. Exceptions require: (1) an employment verification form on file, or (2) 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 may 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: J. Lee Charnley, Ph.D.

Comparative Biochemistry 117 Morgan Hall, (510) 642-4363 Head Adviser: John E. Marshall, Ph.D.

Environmental Science, Policy, and Management 133 Mulford Hall, (510) 642-6410 Head Adviser: Nancy Peluso, Ph.D.

Forestry (M.F.) 133 Mulford Hall, (510) 642-6410 Head Adviser: Annette Silver, Ph.D.

Microbiology 111E Koshland Hall, (510) 642-5167 Head Adviser: Patricia Zambryski, Ph.D.

Molecular and Biochemical Nutrition 117 Morgan Hall, (510) 642-2863 Head Adviser: Joseph Napoli, Ph.D.

Molecular Toxicology 117 Morgan Hall, (510) 642-2863 Head Adviser: Leonard Beldens, Ph.D.

Plant Biology 111E Koshland Hall, (510) 642-5167 Head Adviser: Tom Bruns, Ph.D.

Range Management (M.S.) 133 Mulford Hall, (510) 642-6410 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) 643-2826 Chair: Nick Mills, Ph.D.

Environmental Sciences Department Office: 260 Mulford Hall, (510) 643-4647 Co-Director: Gregory Biging, Ph.D. Co-Director: Wayne Sousa, Ph.D.

Nutritional Sciences and Toxicology Department Office: 119 Morgan Hall, (510) 642-6490 Chair: Leonid Beldens, Ph.D.

Plant and Microbial Biology Department Office: 111E 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 and a group of peers 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)

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: 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 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)

*Professor of the Graduate School
†Recipient of Distinguished Teaching Award
Near Eastern Studies
(College of Letters and Science)

Department Office: 250 Barrows Hall, (510) 642-3757
http://socrates.berkeley.edu/~neareast
Chair: Daniel Boyarin, Ph.D.

Professors
Hamid Algar, Ph.D. Cambridge University. Islamic and Persian
Robert B. Alter (Class of 1937 Professor), Ph.D. Harvard University. Hebrew literature, modern and biblical
Daniel Boyarin (Hearnan 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 (Dabby Professor of Hebrew Bible), Ph.D. Harvard University. Ancient Hebrew language, literature, religion, and culture
Chana Knéidel, Ph.D. University of California, Berkeley. Hebrew, Yiddish, poetry, literary historiography
James T. Morris, Ph.D. Harvard University. Classical Arabic literature, Hispano-Arabic literature, comparative literature
Leslie Pinsak, Ph.D. University of California, Berkeley. Ottoman history, Ottoman text, law, gender
Martin Schwartz, Ph.D. University of California, Berkeley. Old Middle Iranian; Indo-European, Zoroastrianism, poetics and Semitics
David B. Stronach, M.A. Cambridge University. Near Eastern art and archaeology.
Gyula Azaryay (Emeritus), Ph.D. University of California, Berkeley. Near Eastern art
Ariel A. Bloch (Emeritus), Ph.D. Münster University. Arabic and Semitic Studies
William B. 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
Arne D. Kölle (Emeritus), Ph.D. University of Pennsylvania. Assyriology. Akkadian, Mesopotamian culture, literature, music
Ruggero Stefanini (Emeritus). Dottore in Lettere University of Florence. Arabian studies, Hitite

Associate Professors
Cathleen A. Keller, Ph.D. University of California, Berkeley. Ancient Egyptian language, history, art history
Margaret A. Karkashan, Ph.D. American University. Arabic literature
Carol A. Redmond. Ph.D. University of Chicago. Egyptian archaeology and culture. Syro-Palestinian and biblical archaeology
Muhammad Sidad. Ph.D. University of California, Berkeley. Comparative literature, Arabic and Hebrew literature
Niek Veldhuis, Ph.D. University of Groningen. The Netherlands. Ancient Mesopotamian languages and cultures

Lecturers
Rutie Adler, M.A. University of California, Berkeley; M.A., San Francisco State University. Linguistics, Hebrew linguistics, English as a second language. Hebrew as a second language
Ayda Algar, M.A. University of California, Berkeley. Turkish language and literature, language pedagogy
Koonsh Angali, Ph.D. University of California, Berkeley. Persian language
Hatem Bazian, Ph.D. University of California, Berkeley. Arabic language. Islamic law
Chaiva Boyarin, M.A. Hebrew University. Modern and biblical Hebrew
John L. Hayes, Ph.D. University of California at Los Angeles. Semitic linguistics, Arabic, Akkadian, and Sumerian
Sanjot Mehta, Ph.D. University of California, Berkeley. Near Eastern archaeology
Laurene Pearce, Ph.D. Yale University. Akkadian, Assyriology, Cuneiform
Jaleh Pirnazar, Ph.D. University of California, Berkeley. Modern Iranian history. Persian language and literature
Sonia S'hiri (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 civilizations of the ancient, medieval, and modern Near East. The department specializes in training in archaeology, art history, Assyriology, Egyptology, Hittitology, Iranian studies, Judaic and Islamic studies, Turkish, Hebrew, Arabic, and Persian. For students in other disciplines, the department provides a wide variety of courses to supplement such 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.

Cooperative arrangements between the University and the nearby Graduate Theological Union enable students in the department to use the extensive library holdings of the Union and supplement their programs with selected courses in Palestinian archaeology, Biblical studies, and Semitic epigraphy and philology.

The Majors

Note: The Near Eastern Studies (NES) majors were undergoing revisions when this catalog went to press. Please check the online catalog for current information on major and minor programs. All NES majors require NES 10.

The Major in Near Eastern Languages and Literatures

Major guidelines for each discipline are available in the departmental office. With the consent of the department, portions of the requirements may be fulfilled by related courses in other departments.

In Arabic, Hebrew, Persian, and Turkish: Pre-requisite: 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 27-30 units in upper division language and literature courses (taught in the language) and upper division NES courses (taught in English).

In Assyriology and Hittitology and Egyptology: A basic reading knowledge of German is recommended. The major requires NES 10 and 30 units in upper division language and lecture courses.

The Major in Ancient Egyptian and Near Eastern Art and Archaeology

Ancient Near Eastern Art and Archaeology. NES 10 and 15 are required. NES 18, 25 and Anthropology 2 are recommended. Students must complete 20 upper division units from a list of courses in the department office. If, and only if, the courses listed are 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, 101A-101B. NES Anthropology 2 and Anthropology 2 are highly recommended. In addition, students must take six upper division units from a list available in the department office. Some background in French, German, and/or Arabic is recommended.

The Major in Near Eastern Civilizations

Ancient Near Eastern Civilizations. This emphasis requires NES 10; one course from NES 15, 18, 25, or 34; the undergraduate adviser’s approval of the students’ proposed study; and eight upper division courses from a list available in the department office.

Islamic Civilizations. NES 10 is required. This new emphasis, under development, includes courses in history and culture, religion, and arts and literature. Please see the department for the list of courses.

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 Minors

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 course work 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 literatures 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.

The Minor in Arabic, Option A. Required courses: Arabic 20A-20B (in addition to Arabic 1A-1B). Five upper division courses: Arabic 100A; two one-semester literature courses (in Arabic); two one-semester courses in Arabic culture/history.

The Minor 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 Arabian art.

The Minor 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.

The Minor 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. Five upper division courses: Turkish 100A-100B; Turkish 101A-101B or Turkish 102A-102B; a one-semester course in Turkish culture/history.

The Minor in Turkish, Option B. Required courses: Seven upper division courses: five one-semester courses in Turkish literature (in Turkish); two one-semester 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. The same degrees 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 adviser, such courses may be recognized as fulfilling portions of the departmental course work 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 (ancient or modern). The M.A. degree may be substituted on approval of the major adviser.

Plan II requires at least 24 units of course work. For students in the language programs, at least 12 of these 24 units must be in 200-series courses or the major and three semesters of work in a Near Eastern language other that the student’s major language. For students in archaeology and art history programs, at least 12 of the 24 units must be in 200-series courses and three semesters must be drawn from Eastern language other that the student’s major and three semesters of work in a Near Eastern language.

For students in the language programs, at least 12 of these 24 units must be in 200-series courses and three semesters must be drawn from Eastern language other that the student’s major language. For students in archaeology and art history programs, at least 12 of the 24 units must be in 200-series courses and three semesters must be drawn from Eastern language other that the student’s major and three semesters of work in a Near Eastern language.

Special Programs

The Joint Doctoral Program in Near Eastern Religions, 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 history, art, language, literature, and thought patterns of the ancient Near East and Egypt, with emphasis on the various forms of religious expression indigenous to their cultures. Applicants for this 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 Near Eastern languages or an equivalent through an undergraduate degree in those languages. Applicants must be admitted into both the Graduate Theological Union and the University of California, Berkeley; 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 proficiency in one or more ancient or modern Near Eastern languages (either ancient or modern) as a requirement for the degree. Applicants will be admitted into both the Center for Jewish Studies and the Graduate Theological Union and the University of California, Berkeley; the degree is conferred jointly by the two 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 Near Eastern Studies are 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. Each semester, the online Schedule of Classes and listings posted at the department office provide detailed information about the courses offered by the Department of Near Eastern Studies, including when and by whom each course will be given.

Lower Division Courses

10. Introduction to the Near East. (4) Three hours of lecture and one hour of discussion per week. The course 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 Geography C55.

12. 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 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 the student will learn some of the social and economic challenges for contemporary post-Soviet Central Asian republics. Also listed as Geography C55.

18. Introduction to Ancient Egypt. (4) Three hours of illustrated lecture and one hour of museum section per week. A general introduction to ancient Egypt, providing coverage overview of ancient Egyptian culture and society (history, art, religion, literature, language, social structure), Egyptian archaeology (pyramids, tombs, mummies, temples, cities, monuments, daily life), and the history and development of the modern discipline of Egyptology. Assumes no prior knowledge of ancient Egypt. Almost all lectures are illustrated 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.

122. Mediterranean Archaeology. (3) Three hours of lecture per week. Formerly 22. Topics vary from department to department and semester to semester. Enrollment limited to 15 sophomores.

20. 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. This option should be used only in conjunction with instructor's consent to the department chair for approval. Topics vary.

20A. 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; 33 GPA and consent of instructor. Students must submit a written proposal with consent of instructor to the department chair for approval. Topics vary.

224. Archaeology of Ancient Egypt. (4) Three hours of lecture and one hour of museum section per week. Prerequisites: 18 or equivalent or consent of instructor. A survey of the archaeological materials available for the reconstruction of Egyptian culture and society.
A. Early prehistory through the First Intermediate Period.
B. The Middle and New Kingdoms.

Special emphasis will be given to current archaeological theories and recent discoveries. Extensive use will be made of the Hearst Museum collection.

C103. Religion of Ancient Egypt. (3) Three hours of lecture per week. Prerequisites: 18 or 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.

C104. Babylonian Religion. (3) Three hours of lecture per week. A survey of Babylonian religious beliefs and practices based primarily upon the evidence from cuneiform tablets. 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. 18 or equivalent, or 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 when course is given as a seminar and the student completes a seminar paper; two units are given as a seminar and there is no seminar paper or consent of instructor. Surveying 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 religious or literatures; archaeological and/or historical interconnections.

109. Mesopotamian History. (3) Three hours of lecture per week. Ancient 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 Millennium B.C. (3) Three hours of illustrated lecture per week. Prerequisites: 18 or equivalent or consent of instructor. 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.

112. 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: Four equivalent units of 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 Gilgamesh Epic, recorded on twelve tablets in cuneiform, follows him in his quest for fame and eternal life. In this course, we will read the Gilgamesh Epic as well as several earlier texts around the same character. More-sites based largely on the Sumerian material, but also one or another aspect of the Epic. We will follow the traditions around Gilgamesh and see how his fame was used for literary, religious, and political purposes. Finally, we will look at some of the modern Gilgamesh interpretations.

120A. 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 the great empires of Assyry, Babylon, and Persia. 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 artistic interconnections between cultures. Collections on campus or in the area will be incorporated whenever possible. Also listed as History of Art C120A.

120B. The Ancient Art of Mesopotamia: 1000-330 BCE. (4) Three hours of lecture and one hour of discussion per week. The royal art and architecture of later Mesopotamian states and the social, political, and cultural context of the great empires of Assyry, Babylon, and Persia. The course provides an integrated picture of the arts of Mesopotamia and neighboring regions from 1000 BCE to 330 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.

121A. 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 treat in depth topics in Islamic architecture and topics in Islamic art. Subjects addressed may include painting, calligraphy, and book production. Also listed as History of Art C121B.

122A-122B. Iran Iowa. Art and Architecture. (4;4) Three hours of lecture and one hour of discussion per week. The course will treat in depth topics in Islamic architecture and topics in Islamic art. Subjects addressed may include painting, calligraphy, and book production. Also listed as History of Art C122B.

123A-123B. Mesopotamian Archaeology. (4;4) Three hours of lecture and one hour of discussion per week. A survey of the archaeology of Mesopotamia.

124A-124B. Archaeology of the Southern Levant. (3;3) Three hours of illustrated 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 the major theoretical and interpretative frameworks and issues affecting our understanding of the archaeological record.

125. Archaeology and the Bible. (3;3) Three hours of seminar and one hour of section per week. This seminar-type class explores the continually evolving and sometimes confrontational 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 scholarship, and then considers specific topics of current research and debate, focusing on how 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 recent 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 5th century BCE to the 10th century CE. A number of specific archaeological sites along the Silk Road are explored in depth, as examples which reveal the multifaceted current trends along the trade routes. Special attention will be paid to the eclecticism in Silk Road cultures and their interaction, as well as the trade contacts, the Trojan war, and the rise of Phrygia and Lydia. A general theme throughout the course is the size of defining indigenous, regional cultures and the ways in which they interacted with the broader ancient world.

C129. 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 Mycenaean 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 precious worked pieces 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. (F,S,SP) Feldman

C131. 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 classical Judaism, its piety, 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 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 development of the Israelite religion; the history of ancient Near Eastern myths and religion; the history of Israelite religion, the literary features of biblical narrative, and the Dead Sea Scrolls. Also listed as Undergrad Interdisciplinary Studies C132 and Religious Studies C132.

C136. History and Historiography in the Hebrew Bible. (3) Three hours of lecture per week. A critical examination of the form and content of history-like narratives in the Hebrew Bible. The class will explore the nature and use of history and historiographic practices in the ancient Near East and in contemporary historical studies. Selective focus on one or more books in Genesis through Kings, Chronicles, and Ezra-Nehemiah.

C138. The Hero in the Bible and the Ancient Near East. (3) Three hours of lecture per week. An inves-
tigation of concepts of the hero/heroine in the literature of ancient Mesopotamia, Canaan, and Israel. The importance of heroic epic in defining and exploring morality, the self, and the cosmos will be a guiding concern. Texts include the epics of Gilgamesh and Aqhat, the Hebrew Bible, and the New Testament. All texts are read in translation.

139. Modern Jewish Literatures. (3) Three hours of lecture per week. Prerequisites: Upper division standing or consent of instructor. Trends and genres in modern Hebrew literature, represented by the works of Shelomo Zuckerman and Yehuda, with selected texts translated from other Jewish languages like Ladino and Judeo-Arabic. Focus will be on developments in Jewish literary traditions since the 19th century; leading figures in the elaboration of modern Jewish literature and its historical context; themes and issues in modern Jewish poetry and prose. Three hours of lecture per week. Selected texts from Islamic intellectual history.

142. Shi'ite Islam. (3) Three hours of lecture per week. The beliefs, traditions, practices of the Shi'ite school of Islam.

143A-143B. Islam in Iran. (3,3) Three hours of lecture per week. A general survey of the religious history of Iran in the Islamic period; covering the rise and development of religious institutions, the elaboration of the religious sciences, Sufism, and sectarian movements.

144. Sufism: The Mysticism of Islam. (3) May be repeated for credit when subject matter varies. Three hours of lecture per week. A general presentation of Sufism that, while not aiming at exhaustiveness, will serve to introduce students with the place of Sufism in Islamic life; the main outlines of its history; doctrinal and ritual features; the relationship between Sufism and literature, especially poetry; the principal Sufis and their contributions to Islamic literature. Three hours of lecture per week. Introduction to the academic profession of Near Eastern studies. This course will survey the major epochs of Islamic civilization in the Middle East during the Islamic period. They introduce students to various periods, geographical environments and an overview of Islam in the world today.

146A-146B. Islam. (3,3) Three hours of lecture per week. A comprehensive and detailed introduction to the sources, doctrines, practices, and institutions of Islam, together with their historical development and elaboration in a select number of ethnic and geographic environments and an overview of Islam in the world today.

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 medieval period. Topics include the emergence of Islam and the Prophet Muhammad; the rapid rise of an Islamic empire and its effects on the societies it governed; the creation of an Islamic civilization and the religious, political, and intellectual 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 treatment of colonialism, nationalism, and gender in modern Arabic literature and Arab culture in general.

153. The Medieval Framatole Genre: Its Hispano-Arabic Roots. (4) Three hours of lecture per week. The art of inserting stories within stories is typical of certain Oriental literatures and was widely cultivated in Arabic, as well as being translated from Hebrew and Yiddish, with selected texts translated from other Jewish languages like Ladino and Judeo-Arabic. Focus will be on developments in Jewish literary traditions since the 19th century; leading figures in the elaboration of modern Jewish literature and its historical context; themes and issues in modern Jewish poetry and prose.

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. The course examines the development of the Persian literary tradition and its impact on the rise of modern Arabic 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, political events, 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 gender and power in the royal courts of the eastern Mediterranean and Near East, and, for comparative purposes, in courts of China, South Asia, Mesopotamia, and Europe. So often imagined as a site of male sexual dominance, the harem is treated in this course as a mutable concept that sanctioned a range of gendered roles and identities. The term “harem” originated in the Near East, and for Europeans, the patriarchal harem was that of the Ottoman sultan. But the broader question of the interplay among gender, the spatial dynamics of palaces, and royal power is universal. Themes considered comparatively include the spatial configurations of palaces; the status of non-wife (concubines and mistresses); patterns of recruitment to palace service; eunuchs as mediators of human and spatial boundaries.

173B. Topics in the History of Central Asia and the Turks. (3) A survey of the main themes in the cultural, ethnic, and linguistic history of Central Asia and adjacent regions, principally from the rise of Islam down to the present. The first half of the course will deal with the Persian element in Central Asia, and particularly with the Tajiks. The second half will be devoted to the Turks, including their history and expansion, not only in Central Asia but also in Anatolia and South East Europe.

174. Law and Society in the Early Modern Middle East. (3) Three hours of lecture per week. This course examines the social and religious lives of women and men through the lens of the law. A major concern is the relationship between law and culture, namely, the ways in which the law reflected ideals and tensions ranging from ideological competition between states to the problems of ordinary townpeople and peasants. In analyzing actual court cases, we will ask how individuals participated in the life of the court, and how they used the court to articulate their own world-view and sense of moral worth. Readings will be in English. Students wishing to work with sources in the original Ottoman Turkish should also enroll in Turkish 104 (1 unit).

175. History and Culture of Afghanistan. (3) Three hours of lecture per week. This course will discuss Afghanistan from ancient times to the present, including the emergence of Afghanistan as a modern nation-state and its geo-strategic importance. The role of religion and mystical orders and the role of art, music, and literature will also be discussed.

190. Special Topics in Fields of Near Eastern Studies. Course may be repeated for credit. Three hours of lecture per week. Topics explore themes and problems in various fields of Near Eastern studies. They often reflect the research interests of the instructor and supplement regular curricular offerings. Specific descriptions of current offerings in this series are available through the department.

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 un-
220A-220B. Seminar in Near Eastern Art. (4:4) 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 at first seminar meeting. Students who take this seminar 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 archaeology.

290. Special Studies. Course may be repeated for credit. Prerequisites: Consent of instructor. Students may enroll in more than one unit of special study per term, 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)

292. Museum Internship. (4) Course may be repeated for credit. Ten to fifteen hours per week of curatorial work. Must be taken on a satisfactory/unsatisfactory basis. Jointly supervised by a professional staff of a participating museum and a faculty member in the Art and Archaeology division of the Department of Near Eastern Studies.

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 one half 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 2 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 Cuneiform 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 or 124AB or the equivalent. Consent of instructor. Changing topics in the study of ancient cuneiform, stressing the relationship between pottery on the one hand, and archaeological practice and research in Egypt and 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 week-long courses with available ceramic collections (e.g., Herst 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.

601. Individual Studies for Master’s Students. (1-8) 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 the unit or residence requirements for a master’s degree.

602. Individual Study for Doctoral Students. (1-4) 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 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.

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. Authentic 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.

1B. Spoken Arabic. (3) Course may be repeated for credit if different if desired is offered. Three hours of recitation per week. Prerequisites: 1A. Formerly 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. This course is proficiency oriented. 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 a prerequisite for 100B. Intensive reading and analysis of texts of different genres. Guest lectures, films, documents, 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 Arabic of the classical periods of Arab and Islamic civilization. Reading and analysis of literary texts of various genres, including essays, biography, and travel literature.

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 historians and 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: 20B or equivalent. Readings in the basic texts of Islam (Qur’an, 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 primarily for majors and prospective majors in Arabic studies.

A. The Classical Periods: A literary-historical survey of Arabic literature from pre-Islamic times to the middle of the thirteenth century, with emphasis on the more important achievements of major Arab authors.

B. The Post-Abbasid and Modern Periods: A literary-historical survey of Arabic literature from the middle of the thirteenth century to the present.

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. 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 standard and classical Arabic in the Arab world, and on the Western grammatical tradition.

201. Arabic Dialectology. (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 topics vary. Three hours of reading per week. Prerequisites: Three years of Arabic. Selected readings in Arabic from the Qur’an, traditional Islamic exegesis, and other secondary materials.

212. Topics in Modern Arabic Literature: Poetry. (3) Course may be repeated for credit. Three hours of lecture per week. Prerequisites: 109. 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 topics vary. 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 topics vary. Three hours of seminar per week. Prerequisites: Consent of instructor. This course examines the origins, status, and function of literary theory in the making of modern Arabic literature. Questions of cultural influence, literary genres, forms, modes, and techniques of representation are 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.

Professional Courses

301A-301B. Teaching Arabic. (3:3) One hour of lecture per week plus periodic in-class 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 on contrastive analysis of English and Arabic,
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 texts.

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. Prerequisites: Concurrent or previous enrollment in 201A-201B or 202A-202B.

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 restricted by regulations shown in the General Catalog. Prerequisites: Concurrent or previous enrollment in 201A-201B or 202A-202B.

201A-201B. Later Stages of Egyptian. (3:3) Three hours of lecture per week. Prerequisites: 101A-101B and 204A-204B. 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: 201A-201B or consent of instructor. Philological analysis of texts of a single genre and period.

Hebrew

Lower Division Courses

1A-1B. Elementary Hebrew. (5:5) Five hours of recitation and one hour of laboratory per week.

20A-20B. Intermediate Hebrew. (5:5) Five hours of lecture per week. Prerequisites: 1A-1B.

Upper Division Courses

100A-100B. Advanced Hebrew. (3:3) Three hours of lecture per week. Prerequisites: 100A-100B. Advanced Hebrew, especially designed for those going on to study the modern Hebrew literature. Vocabulary building, grammar review, and literary analysis of a sampling of modern texts.

102A-102B. Postbiblical Hebrew Texts. (3:3) Course may be repeated for credit with consent of instructor. Three hours of lecture per week. Prerequisites: 20A-20B or equivalent. Texts from the rabbinic period (Mishnah, Toselita, Talmud, and Midrash) and an introduction to the languages of rabbinic texts.

103A. Later Rabbinic and Medieval Hebrew Texts. (3) Course may be repeated for credit. Three hours of lecture per week. Prerequisites: 20A-20B. Study of midrashic, exegetical, halachic (legal), poetic, apocryphal, messianic, or historical texts.

104A-104B. Modern Hebrew Literature and Culture. (3:3) Course may be repeated for credit with different topic and consent of instructor. Three hours of lecture per week. Prerequisites: 100A-100B or equivalent. A close reading of selected works of modern Hebrew fiction, poetry, and drama in their cultural and historical contexts. Topics vary from year to year and include literature and politics, eros and gender, and nationalism, Middle-Eastern and European aspects of Israeli literature and culture.

105A. The Structure of Modern Hebrew. (3) Course may be repeated for credit. Three hours of lecture per week. An analysis of Hebrew grammar, syntax, semantics, morphology, history of the language, fixed expressions, discourse analysis, contrastive features of Hebrew and English in the context of contemporary linguistic theories.


207A-207B. Biblical Hebrew Texts. (3:3) Course may be repeated for credit. Three hours of lecture per week. Prerequisites: 20A-20B. Formerly 101A-101B. The tools and procedure of biblical exegesis applied to simple narrative texts.

148A-148B. The Art and Culture of the Talmud: Advanced Textual Analysis. (3:3) Course may be repeated for credit. Three hours of lecture per week. Prerequisites: 102A-102B or consent of instructor. In this course, we will read and analyze closely talmudic texts in the original languages—Hebrew and Aramaic—together with selected medieval commentaries. The primary focus of the course will be on the acquisition of facility in reading the Talmud, comprehension of philological and historical-cultural issues and methods of study, as well as understanding the formative relation of the Talmud to the structures and practices of traditional Jewish cultures.

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. Instruction 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. Prerequisites: Concurrent or previous enrollment in 201A-201B or 202A-202B.


202A-202B. Advanced Late Antique Hebrew Texts. (3:3) Course may be repeated for credit. Three hours of lecture per week. Prerequisites: 103A-103B and 104A-104B.

205A-205B. Biblical and Medieval Hebrew Texts. (3:3) Course may be repeated for credit. Three hours of lecture per week. Prerequisites: 204A-204B or equivalent. Various readings in selected biblical texts, including midrashic, exegetical, renaissance, apocalyptic, and political texts.

206A-206B. Modern Hebrew Literature and Culture. (3:3) Course may be repeated for credit. Three hours of lecture per week. Prerequisites: 205A-205B or consent of instructor. Focus on biblical texts seen from a literary point of view, attempting to establish connections with later Hebrew literature.

298. Seminar. (1-4) Course may be repeated for credit. Prerequisites: Consent of instructor. Special topics in biblical studies. Topics vary and are announced at the beginning of each semester.
Persian and Iranian

Persian

Lower Division Courses

1A-1B. Elementary Modern Persian. (5,5) Five hours of lecture per week.

11A. Reading and Composition for Persian Speaking Students. (5) Five hours of recitation per week. Prerequisites: Rudimentary knowledge of spoken Persian 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. (F) Angali

11B. Reading and Composition for Persian-Speaking Students. (5) Five hours of recitation per week. Prerequisites: 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. (SP) Angali

100A-100B. Intermediate Modern Persian. (5,5) Five hours of lecture per week. Prerequisites: 1A-1B or equivalent. Sequence begins Fall.

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. Prerequisites: 100A-100B or equivalent. Readings in both prose and poetry, drawn chiefly from modern Persian literature, designed to increase reading skills and vocabulary and to provide a transition to the study of more difficult texts.

102A-102B. Readings in Classical Persian Prose. (3,3) Course may be repeated for credit. Three hours of lecture per week. Prerequisites: 101A-101B or equivalent. Systematic study of representative selections from all periods of classical Persian literature, with attention to the historical and intellectual context.

103A. Classical Persian Poetry. (3) Course may be repeated for credit. Three hours of lecture per week. Prerequisites: 101A-101B or equivalent. Systematic study of poems belonging to all genres of classical Persian poetry, with consideration of questions of prosody, rhetoric and style.

104B. Contemporary Persian Literature. (3) Course may be repeated for credit. Three hours of lecture per week. Prerequisites: 101A-101B or consent of instructor. This course will deal with significant works of Persian prose and poetry from the beginning of the nineteenth century down to the present. Lectures on novels or other works or extracts from them will be read in the original as a preliminary to their analysis in terms of literary and stylistic development, as well as the changing role of literature in society.

A. The works of the nineteenth century and the period of the Constitutional Revolution (1905-1911).
B. The literature of the rest of the twentieth century.

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. Instruction in areas not covered by regularly scheduled courses.

Upper Division Courses

200A-200B. Advanced Persian. (3,3) Course may be repeated for credit. Three hours of lecture per week. Prerequisites: Twelve units of upper division work. Different sections offering a variety of texts from all periods of the literature.

202A-202B. Persian Sufi Writings. (3,3) Course may be repeated for credit. Three hours of lecture per week. Readings in all genres of Sufi expression, prose and poetry, with concentration on major figures.

203A. Persian Historical Texts. (3) Course may be repeated for credit. Three hours of lecture per week. Systematic readings in the classics of Persian historiography, from the tenth to the eighteenth centuries.

298. Seminar. (1-4) Course may be repeated for credit. Prerequisites: Consent of instructor. Special topics in Persian. Topics vary and are announced at the beginning of each semester.

Iranian

Upper Division Courses

110A-110B. Middle Persian. (3,3) Course may be repeated for credit. Three hours of lecture per week. Prerequisites: Persian 100A-100B or equivalent; background in German or French recommended, but not required. Manichaean Middle Persian texts, with an introduction to Pahlavi.

Graduate Courses

201A-201B. Iranian Philosophy. (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, Manichaean, and Buddhist texts.

Semitics

Upper Division Courses

100A-100B. Aramaic. (3,3) Course may be repeated for credit. Three hours of lecture per week. Prerequisites: Hebrew 100A-100B; Biblical and Ancient Aramaic, including study of the Aramaic parts of Daniel and Ezra and the inscriptions and papyri from Syria, Egypt, Mesopotamia, and the Persian Empire. Sequence begins Fall.

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. Instruction in areas not covered by regularly scheduled courses.

Graduate Courses

200A. Studies in Comparative Semitics. (3) Course may be repeated for credit. Three hours of lecture per week. Prerequisites: Twelve upper division units in Semitics or consent of instructor; 200A is prerequisite to 200B. Comparative Semitic phonetics, morphology, and lexicography within the wider context of Afro-Asiatic linguistics. Late in the course, concentration on the evolution of one particular Semitic language. Sequence begins Fall.

205A-205B. Ugaritic. (3,3) Course may be repeated for credit. Three hours of lecture per week. Prerequisites: 101A-101B or 100A-100B or equivalent. Ugaritic 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 Hebrew. Second semester topics will vary from year to year. Possible topics include: Canaanite dialects; El-Amarna Akkadian; Eblaite. 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 history and culture.

298. Seminar. (1-4) Course may be repeated for credit. Prerequisites: Consent of instructor. Special topics 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 lecture per week. Prerequisites: 100A-100B or consent of instructor. Selected topics from modern Turkish literary works.

104. Law and Society in the Early Modern Middle East: Sources in Ottoman Turkish. (1) One hour of discussion per week. Prerequisites: Consent of instructor. This course is to be taken concurrently with Near Eastern Studies 174 by those students who wish to supplement the readings assigned for 174 with additional readings of primary sources in the original Ottoman Turkish.

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. Instruction 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 restricted by regulations in the General Catalog.

Graduate Courses

298. Seminar. (1-4) Course may be repeated for credit. Prerequisites: Consent of instructor. Special topics in Turkish. Topics vary and are announced at the beginning of each semester.
**Neuroscience (Interdisciplinary Graduate Program)**

**Office:** 132 Barker Hall, (510) 643-6636  
**Director:** Robert T. Knight, M.D.

**Professors**  
Marius S. Banks, Ph.D. University of Minnesota (Optometry)  
Mark D’Esposito, M.D. State University of New York Health Science Center at Syracuse  
John Fannon, Ph.D. University of California, Santa Barbara (Optometry)  
Robert H. Greenman, O.D. Ohio State University, Ph.D. University of California, Berkeley (Optometry)  
Scott M. Good, Ph.D. UCSC (Chemical Engineering)  
Ehud Isacoff, Ph.D. McGill University (Molecular and Cell Biology)  
Richard Ivey, Ph.D. University of Oregon (Psychology)  
William Jagust, M.D. State University of New York, Stony Brook  
Stanley A. Klein, Ph.D. Brandeis University (Optometry)  
Richard T. Knight, Ph.D. Northwestern University (Neurology)  
Hans Kecskemethy, Ph.D. University of California, Los Angeles (Psychology)  
Harold J. Kamb, Ph.D. Columbia University (Molecular and Cell Biology)  
Dennis L. Levitt, Ph.D. University of Houston (Optometry)  
John Ngai, Ph.D. California Institute of Technology (Molecular and Cell Biology)  
Arturo P. Shimizu, Ph.D. University of Washington (Psychology)  
Richard A. Silverman, Ph.D. Columbia University (Molecular and Cell Biology)  
Mark A. Tamayo, Ph.D. Yale University (Environmental Science, Policy, and Management)  
David A. Weisblat, Ph.D. California Institute of Technology (Molecular and Cell Biology)  
Frank S. Weinstock, Ph.D. Johns Hopkins University (Molecular and Cell Biology)  
Jeffrey A. Winer, Ph.D. University of Tennessee (Molecular and Cell Biology)  
Ingemar Zuckerkandl, Ph.D. University of Chicago (Psychology)  
Robert S. Zucker, Ph.D. Stanford University (Molecular and Cell Biology)  

**Associate Professors**  
Yang Dan, Ph.D. Columbia University (Molecular and Cell Biology)  
Jack Gallant, Ph.D. Yale University (Psychology)  
Gian Gangna, Ph.D. St. Louis University (Molecular and Cell Biology)  
Lucia Jacobs, Ph.D. Princeton University (Psychology)  
Richard W. Sensibiello, Ph.D. University of California, Berkeley (Molecular and Cell Biology)  

**Assistant Professors**  
Li Chen, Ph.D. University of Southern California  
Xiaohua Gong, Ph.D. Scripps Research Institute (Optometry)  
Eileen R. Hegbert, Ph.D. University of Arizona (Environmental Science, Policy, and Management)  
Laura H. Hafner, Ph.D. Johns Hopkins University (Psychology)  
Ditha L. Hsu, Ph.D. Massachusetts Institute of Technology (Chemical Engineering)  
Kristin Scott, Ph.D. University of California, San Diego  
Noam Sobel, Ph.D. Stanford University (Psychology)  
Frederic Thenissen, Ph.D. University of California, Berkeley (Psychology)  
Jonathan Wallis, Ph.D. Cambridge University

**Graduate Program**

The Neuroscience Graduate Program is an integrated interdisciplinary graduate program offering students programs leading to a Ph.D. degree in neuroscience. The program includes, in addition to faculty from the Helen Wills Neuroscience Institute, approximately 50 faculty members in the Departments of Molecular and Cell Biology; Psychology; Integrative Biology; Chemical Engineering; Environmental Science, Policy, and Management; and in the Schools of Optometry/Program in Vision Science and Public Health. Faculty members participate in neuroscience graduate training and research from the molecular and genetic levels to the cognitive and computational levels. Areas of training and research include analysis of ion channels, receptors, and signal transduction mechanisms; formation, function, and plasticity of synapses; control of neural cell fate and pattern formation; neuronal growth cone guidance and target recognition; mechanisms of sensory processing in the visual, auditory, and olfactory systems; development and function of neural networks; motor control; and the neural basis of cognition. The preparations in use range from reductionist models to complex neural systems and whole cells in culture, simple invertebrate and vertebrate organisms, model genetic systems, the mammalian cerebral cortex, and human brain imaging.

Faculty in the Neuroscience Institute are involved in five broad research areas: molecular neuroscience, cellular neuroscience, developmental neuroscience, systems neuroscience, and cognitive neuroscience. 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 must take the GRE General Test, and strongly encouraged to submit one GRE Subject Test score (in biochemistry and cell biology, chemistry, psychology, biology, computer science, or physics).

Graduate students are required to take only a mod- est number of courses during their first two years, and they are encouraged to take a wide range of specialized graduate courses. Graduate advisers help students tailor their course work to their individual needs and interests. To ensure breadth in didactic content, students are required to choose courses that are distributed between at least two subdivisions of neuroscience (i.e., cell, molecular, and developmental neuroscience; systems neuroscience; and cognitive neuroscience). Note that students, with approval from the graduate adviser, may take courses in other specialized areas important for developing 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 stu- dents advance to candidacy for the Ph.D. by passing a qualifying examination.

For detailed information on the graduate program, see http://neuroscience.berkeley.edu, or e-mail neurosci@berkeley.edu, or mail your inquiries to Graduate Student Affairs, Neuroscience Institute, 132 Barker Hall #3190, University of California, Berkeley; Berkeley, CA 94720-3190.

The Neuroscience Institute has no designated lecture courses, but the various affiliated departments offer a wide range of neuroscience graduate courses. A selection is listed below. (For more details, see individual course descriptions.)

**General Survey Courses:** Advanced Principles of Neuroscience (MCB 260), and Ethics in Scientific Research (MCB 293C).

**Cellular, Molecular, and Developmental Neuro- science Courses:** Advanced Cellular and Molecular Neurobiology (MCB 261), Advanced Cell Biology (MCB 250), Genetics (MCB 240), Biochemistry (MCB 247), and Development of nervous systems (MCB 250). Advanced Developmental Neurobiology (MCB 263), Advanced Developmental Biology (MCB 231), and Cognitive and Biological Development (Psych 220P).

**Systems/Computational Neuroscience Courses:** Systems/Computational Neurobiology (MCB 262), Sensory Systems (MCB 264), Functional Neuroanatomy (IB 245), and Sensory Systems (Psych 210C).

**Cognitive/Behavioral Neuroscience Courses:** Cognitive Neuroscience (MCB 290), Cognitive and Biological Development (Psych 220F), Functional Neuroanatomy (IB 245), and Functional MRI Methods (Psych 214).

Other selected seminar courses include Graduate Seminar on Specialized Topics in Neuroscience (MCB 290), Issues in Cognitive Neuroscience (Psychology 218), and Graduate Seminar on Specialized Topics in Biological and Cognitive Psychology (Psychology 290).

The Helen Wills Neuroscience Institute also sponsors an annual campuswide Neuroscience retreat, a weekly seminar series, and a Neuroscience Journal Club.

**Nuclear Engineering (College of Engineering)**

**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 fuel cycle systems, devices for the detection, prevention, and treatment of disease, and systems for the production of high-level radioactive waste. The principles taught in the nuclear engineering courses are applicable both to nuclear fission reactions and to the development of nuclear fusion, 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

**Department**

**College of Engineering**

**Department Office:** 4153 Etcheverry Hall, (510) 642-5010  
**Website:** http://www.nuc.berkeley.edu/  
**Contact:** Per F. Peterson, Ph.D.

**Professors**

*Paul L. Chambre, Ph.D. University of California, Berkeley (Emeritus)*  
Daniel M. Kammen, Ph.D. California Institute of Technology, Berkeley (Emeritus)*  
Marian C. Diamond, Ph.D. University of California, Berkeley (Emeritus)*  
Robert S. Zucker, Ph.D. Stanford University (Emeritus)*  
Edward C. Morse, Ph.D. University of Illinois, Chicago (Emeritus)*  
Donald R. Candler (James File Endowed Chair in Engineering), Sc.D. Massachusetts Institute of Technology, Nuclear materials (Emeritus)*  
Stanley A. Klein, Ph.D. Brandeis University (Emeritus)*  
Mu-ming Poo, Ph.D. Johns Hopkins University (Emeritus)*  
Mu-ming Poo, Ph.D. Johns Hopkins University (Emeritus)*  
Per F. Peterson (Chair), Ph.D. University of California, Berkeley, Thermal hydraulics and nuclear materials management (Emeritus)*  
Jocelyn Ahn, Ph.D. University of California, Berkeley (Emeritus)*  
Daniel Iverson, Ph.D. University of California, Berkeley (Emeritus)*  
Gerald Westheimer (Emeritus)*  
John Verboncou, Ph.D. (In Residence)*  

**Graduate Program**

The Nuclear Engineering Graduate Program offers students programs leading to a Ph.D. degree in nuclear engineering. The graduate program includes faculty from the Department of Nuclear Engineering and Radiological Sciences, approximately 50 faculty members in the Departments of Nuclear Engineering and Radiological Sciences. The graduate program offers a wide range of graduate courses. A selection is listed below. (For more details, see individual course descriptions.)

**General Survey Courses:** Advanced Principles of Nuclear Engineering (Nuclear Engineering 219A), and Applied Nuclear Engineering (Nuclear Engineering 219B).

**Nuclear Engineering Courses:**

*prefix=course satisfies R&C requirement  
R prefix=course satisfies R&C requirement

**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 fuel cycle, devices for the detection, prevention, and treatment of disease, and systems for the production of high-level radioactive waste. The principles taught in the nuclear engineering courses are applicable both to nuclear fission reactions and to the development of nuclear fusion, 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 properties of nuclear materials, and operations and 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 radiation protection, environmental effects, nuclear safety, risk analysis, high-level radioactive waste disposal, medical imaging, biophysics, and biomedical devices.

Undergraduates can major in general nuclear engineering, biomedical engineering, or the nuclear engineering double major programs. Students can major in the double major programs beginning in their junior year. The double major programs are jointly offered through nuclear engineering and the following fields of engineering: mechanical, electrical, materials science, and chemical. The department also supports the bioengineering program by offering courses in biomedical engineering and radiological physics. Graduate programs leading to the master's and doctoral degrees involve advanced coursework in nuclear engineering and in allied fields and direct participation in research under supervision of the nuclear engineering faculty.

The B.S. program is accredited in nuclear engineering 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.

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, Electronics Techniques for Engineering (may also be satisfied by EECS 40); electives.

- **Upper Division.** Required: Engineering 115, 117; Nuclear Engineering 101, 104A-104B, 150, 170A; 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.

Biomedical 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, Electronics Techniques for Engineering (may also 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 102, 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 Breadling and Composition requirement. Refer to www.coee.berkeley.edu/current_students/hsreq.html for details or go to 308 McLaughlin Hall for a handout.

For details on major degree requirements, please consult the Announcement of the College of Engineering.

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**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 nuclear engineering or the physical sciences. For all programs, required preparation in undergraduate course work includes mathematics through partial differential equations and advanced analysis, mechanics, energy, 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 technology: applied nuclear physics; biophysics; biomedical analysis, high-level radioactive waste disposal, and advanced medical imaging, biophysics, and biomedical devices.

**Graduate Degree Requirements**

104B. Nuclear Engineering Laboratory. (2) One hour of lecture and four hours of laboratory per week. Prerequisites: 120 and 180 recommended; 104A not required. Nuclear materials experiments at high temperature and thermal-hydraulics and two-phase flow; diagnosis of fusion plasmas and fusion neutrons. (F) Wirth

107. Introduction to Imaging. (3) Three hours of lecture per week. Prerequisites: 101 and 104A or consent of instructor. Introduction to medical imaging physics and systems, including x-ray computed tomography (CT), magnetic nuclear resonance (NMR), positron emission tomography (PET), and SPECT; basic principles of tomography and an introduction to unfolding reconstruction methods; effects of counting statistics, inherent system resolution and human factors. (SP) Vujic

120. Nuclear Materials. (3) Three hours of lecture per week. Prerequisites: Engineering 45 and an upper division course in thermodynamics. Effects of irradiation on the atomic and mechanical properties of materials in nuclear reactors. Fishbone structure of reprocessed nuclear waste; damage to structural alloys; fabrication and properties of uranium dioxide fuel. (F) Olander, Wirth

124. Radioactive Waste Management. (3) Three hours of lecture per week. Prerequisites: Engineering 117 or equivalent course. Components and material flowsheets for nuclear fuel cycle, waste characteristics, sources of radioactive wastes, compositions, radioactivity and health effects. Radioactivity and waste technologies; waste disposal technologies; safety assessment of waste disposal. (F.SP) Ahn

150. Introduction to Nuclear Reactor Theory. (3) Three hours of lecture per week. Prerequisites: Mathematics 53 and 54. Neutron interactions, nuclear fission and chain reaction systems, neutrons in thermal and fast nuclear reactors. Diffusion and slowing down of neutrons. Criticality calculations. Nuclear reactor dynamics and reactivity feedback. Production of radionuclides in nuclear reactors. (SP) Greenspan, Vujic


161. Nuclear Power Engineering. (3) Three hours of lecture per week. Prerequisites: Course(s) in fluid mechanics and heat transfer; junior-level course in thermodynamics. Energy conversion in nuclear power systems; design of fission reactors; thermal and structural analysis of reactor core and plant components; thermal-hydraulic analysis of accidents in nuclear power plants; safety evaluation and engineered safety systems. (F) Peterson

162. Radiation Biophysics and Dosimetry. (3) Three hours of lecture per week. Prerequisites: 101 or consent of instructor. Interaction of radiation with matter; physical, chemical, and biological effects of radiation on human tissues; dosimetry units and measurements; internal and external radiation fields and dosimetry; radiation exposure regulations; sources of radiation and radiation activity; basic shielding concepts; Monte Carlo modeling of radiation transport for dosimetry and shielding calculations; elements of radiation protection and control. (SP) Vujic

167. 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 philosophies, design criteria, and regulations. Deterministic and probabilistic models, reliability analysis, nuclear and thermal-hydraulic transients, radiological conse-
quences, and risk assessment. Design-based and se-
217A. Nuclear Design: Design in Nuclear Power
217B. Nuclear Design: Design in Biological, Nu-
221. Corrosion in Nuclear Power Systems. (3)
222. Safety Assessment for Geological Disposal of
224. Safety Assessment for Geological Disposal of
225. The Nuclear Fuel Cycle. (3) Three hours of
228. Fusion Reactor Engineering. (3) Three hours of
229. Individual Research. (1-12)
230. Nuclear Reactor Theory. (4) Four hours of
235. Nuclear Materials; Section 7—Fusion reaction design; 2) identify fluid movement in reservoirs, 3) determine 4) perform borehole diagnostics, using neutron and pho-
239A. Topics in this course will include the latest
topics ranging from nuclear-fuel reprocessing to
to the campus community. (F,SP)
239B. Introduction to warm and hot magnetized plasmas. Single particle mo-
246. Fluid dynamics and heat transfer; thermal and
calculations, inhomogeneous reactor design, effects of poisons and fuel depletion. Offered odd-num-
250. Nuclear Reactor Theory. (4) Four hours of lec-
tuition restrictions apply; see the In-
255. Numerical Simulation in Radiation Transport. (3)
256. Thermal Aspects of Nuclear Reactors. (4) Four hours of lecture per week. Prereq:
257. Nuclear Reactor Safety. (3) Three hours of lec-
258. Irradiation Effects in Nuclear Materials. (3)
259. Supervised Independent Study. (1-12) Credit or
260. Radiation Effects in Nuclear Materials. (3)
261. Nuclear Reactions and Interactions of Radia-
262. Irradiation Effects in Nuclear Materials. (3)
263. Corrosion in Nuclear Power Systems. (3)
264. Nuclear Engineering / 387
267. Nuclear Reactor Safety. (3) Three hours of lec-
268. Group Study for Advanced Undergraduates. (1-
269. Group Study for Advanced Undergraduates. (1-
270. Introduction to Controlled Fusion. (3) Three hours of lecture per week. Prereq:
271. Principles and Method of Risk Analysis. (4) Four hours of lecture per week. Prereq:
272. Group Study for Advanced Undergraduates. (1-
273. Group Study for Advanced Undergraduates. (1-
274. Safety Assessment for Geological Disposal of
275. Principles and Method of Risk Analysis. (4) Four hours of lecture per week. Prereq:
276. Safety Assessment for Geological Disposal of
277. Group Study for Advanced Undergraduates. (1-
278. Group Study for Advanced Undergraduates. (1-
279. Case studies of accidents. Offered odd-numbered years. (SP) Kastenberg
280. Fusion Reactor Engineering. (3) Three hours of lecture per week. Prerequisites: 120 and 180. En-
geering and design of fusion systems. Introduction to
calculations. Void swelling and hot magnetized plasmas. Single particle mo-
281. Fully Litzed Plasmas. (3) Three hours of lec-
282. Charged Particle Sources and Beam Tech-
282A. Charged Particle Sources and Beam Tech-
282B. Charged Particle Beam Instrumentation Laboratory. (1) Three hours of laboratory/discus-
283. Charged Particle Sources and Beam Techn-
284. Charged Particle Sources and Beam Tech-
285. Charged Particle Sources and Beam Techn-
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292. Charged Particle Sources and Beam Techn-
293. Charged Particle Sources and Beam Techn-
294. Charged Particle Sources and Beam Techn-
295. Nuclear Engineering Colloquium. One and one-
half hours of lecture per week must be taken on a satisfac-
tory/satisfactory basis. Presentations on current topics in
to be held at Lawrence Berkeley National Laboratory. Also listed as Engineering 282B.

Graduate Courses
201. Nuclear Reactions and Interactions of Radia-
202. Irradiation Effects in Nuclear Materials. (3)
203. Corrosion in Nuclear Power Systems. (3)
204. Nuclear Design: Design in Nuclear Power

B prefix=language course for business majors
R prefix=course satisfies R&Q requirement
AC suffix=course satisfies American cultures requirement
*Professor of the Graduate School
†Recipient of Distinguished Teaching Award
Nutritional Sciences and Toxicology  
(College of Natural Resources) 

Department Office: 119 Morgan Hall, (510) 642-6490  
http://cnr.berkeley.edu/site/index.php  
Chair: Leonard Bjeldanes, Ph.D.  

Professors  
Leonard F. Bjeldanes, Ph.D. University of California, Los Angeles. Food toxicology, chemical carcinogenesis  
John E. Casida, Ph.D. University of Wisconsin—Madison. Insecticide chemistry and toxicology  
Bento D. de Lumen, Ph.D. University of California, Davis. Food chemistry, molecular biology of legumes as food source  
Sharon E. Fleming, Ph.D. University of Saskatchewan. Food digestibility, gastrointestinal function  
Mark P. Hettick, Ph.D. University of Massachusetts Institute of Technology. Hepatic metabolic regulation, nutrition and inflammation  
Isako Kuro, Ph. Osaka City University, Japan. Natural products  
Joseph L. Napoli, Ph.D. University of Michigan. Endocrinology of retinoid metabolism  
Barry Shair, Ph.D. University of London. Regulation of vitamin metabolism  
Hsi Sok Sud, Ph.D. University of Wisconsin—Madison. Lipid metabolism, adipose cell differentiation  
Kenneth J. Carpenter, Ph.D. (Emeritus)  
Janet C. King, Ph. (Emeritus)  
Angela C. Liffie, Ph.D. (Emeritus)  
Mary Ann Williams, Ph.D. (Emeritus)  

Associate Professors  
Nancy K. Amy, Ph.D. University of Virginia. Regulation of trace element metabolism  
Gregory W. Aponte, Ph.D. University of California, Davis. Gastrointestinal peptides and nutrient assimilation  
George W. Chang, Ph.D. University of California, Berkeley. Nutrition and resistance to infection  
Susan M. Oace, Ph.D. University of California, Berkeley. Nutrition and metabolism of food products  
Christopher Vulpes, Ph.D. University of California, San Francisco. Nutritional approaches to study of mammalian copper and iron metabolism  

Adjunct Professors  
Dale E. Johnson, Ph.D. University of Michigan. Predictive toxicology; in vitro and in silico approaches to predict human toxicity  
Ronald M. Krauss, M.D. Harvard Medical School. Genetic and nutritional regulation of lipoprotein metabolism  
Robert O. Ryan, Ph.D. University of Nevada, Reno. Structure and function of exchangeable apolipoproteins  
Elizabeth C. Myers, Ph.D. University of Arizona. Structure of ferritin protein and role it plays in iron overload  
George Wolf, Ph.D. Oxford University. The influence of Vitamin A on carcinogenesis  

Lecturers  
Mark Hudes, Ph.D.  
Nancy Hudson, M.S., R.D.  
Joanne Reda, M.A., R.D.  
Mary Mead, M.Ed., R.D.  

Director, Clinical Dietetics Program  
Nancy Hudson, Ph.D., R.D.  

Graduate Programs  

Satisfactory 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 adviser, intended to provide an opportunity for individual study in consultation with the major field adviser, intended to provide an opportunity for  

Department Overview  
The research and curriculum of the Department of Nutritional Sciences and Toxicology focuses on the understanding of the function of nutrients, phytochemicals, and toxicants, and the metabolic interaction of these elements in living organisms. This field provides information about nutrition for optimum health and the treatment or prevention of chronic disease conditions (including diabetes, heart disease, and cancer). The field also addresses health and safety concerns in food and chemical production and the environment. Our major programs provide students for careers in many disciplines of biological sciences, including medicine, dentistry, pharmacology, dietetics, public heath, forensic sciences, biotechnology, environmental protection, and related fields.  

Undergraduate Programs  
The Department of Nutritional Sciences and Toxicology offers two undergraduate majors, nutritional sciences and molecular toxicology, leading to the B.S. degree. Courses that fulfill the lower division prerequisites for junior standing include Biochemistry 1A, 1B; Chemistry 1A, 3A/3L-3B/3L; English 1A-1B or equivalent; Mathematics 1A; Molecular and Cell Biology 32, 32L; Nutritional Sciences 10; Physics 8A; and Statistics 2.  

Nutritional Sciences Major  
The nutritional sciences major combines a strong foundation in the biological and chemical sciences with a choice of one or two 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. Dietetics 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. Toxicology focuses on the biochemical and physiological study of the adverse effects of nutrients and non-nutrients in the diet.  

Molecular Toxicology Major  
The molecular toxicology major combines a strong foundation in the chemical sciences with a focus 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 to give students a better understanding of how these agents interact within living organisms and what should be done to ensure human health and safety.  

Minors  
Students who have pursued basic course work in biological sciences under another major may be eligible for one of the two undergraduate minors offered by the Department of Nutritional Sciences and Toxicology. Both minors require a minimum GPA of 3.0 for all completed units. The minor in nutritional sciences requires Nutritional Sciences 103, 106, 160, and 3 additional elective units of upper division course work in the department. The minor in toxicology requires Nutritional Sciences 103, 106, 110, and 120 and 3 additional elective units of upper division course work in the department. All courses must be taken on the Berkeley campus for a letter grade. No course substitutions are allowed. Interested students should obtain the requirements from the department before starting the minor. Students will be awarded the minor following the satisfactory completion of certification from the department.  

Graduate Programs  
The department administers two Ph.D. graduate programs in Molecular and Biochemical Nutrition and Molecular Toxicology. The Molecular and 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 sciences or 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 course work. Students enroll for a minimum of two semesters in NS H196, Honors Research in Nutritional Sciences 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 their 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, 1160. 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 reviewed as to 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, and record its nutrient content in light of their particular needs. (F,SP) Staff  

11. Introduction to Toxicology. (2) Two hours of lecture per week. Prerequisites: Open to students pursuing science and non-science majors. Discussion of principles for the evaluation of toxic hazard of natural and man-made substances present in the environment, the workplace, food, drink, and drugs. The bases for 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) Staff  

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. Formerly Nutrition 24. 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. (F,SP) Staff  

39. Freshman/Sophomore Seminar. Course may be repeated for credit as topic varies. Priority given to freshmen and sophomores. Sections 1-2 to be graded on a letter-grade basis. Sections 3-4 to be graded on a passed/not passed basis. Formerly Nutritional Sciences 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-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 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 and students.
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. One hour of group study per week per semester on a pass/credit/no credit basis. Prerequisites: Lower division standing and consent of instructor. Formerly Nutritional Sciences 98. Study of special topics in nutritional sciences that are not covered in depth in regular courses. (F,SP)

99. Supervised Independent Study and Research. (1-6) Credit is granted only with departmental consent. One to six hours of independent research under the direction of a faculty supervisor. Written report required upon completion of the project. Enrollment is restricted by regulations in the General Catalog. (F,SP)

Upper Division Courses

103. Nutrient Function and Metabolism. (3) Three hours of lecture per week. Prerequisites: 10, Molecular and Cell Biology 32, and Molecular and Cell Biology 102 or consent of instructor. Formerly Nutritional Sciences 103. Delivery of nutrients from foods to mammalian cells; major metabolic pathways; function of nutrients in energy metabolism, nitrogen and lipid metabolism, immunity, and regulatory processes; the role of nutrient interaction. One hour of discussion per week. (SP)

104. Human Food Practices. (2) Two hours of lecture and one hour of discussion per week. Prerequisites: 10 recommended. Formerly Nutritional Sciences 104. Historical, socio-economic, cultural, socio-economic, political, and personal determinants of human diets. Community food and nutrition problems and programs. Food safety and consumer protection. Contribution of major nutritional and functional properties of foods and the changes which occur during preparation, processing and storage. Evaluation of the quality criteria of foods and the criteria for standards and legal requirements. (F) de Gemen

105. Introduction to Food Science. (3) Three hours of lecture per week. Prerequisites: Molecular and Cell Biology 102 or consent of instructor. Formerly Nutritional Sciences 105. Evaluation of the chemical, physical, functional, and nutritional properties of foods and the changes which occur during preparation, processing and storage. Evaluation of the quality criteria of foods and the criteria for standards and legal requirements. (F) Mead

106. Introduction to Food Science. (3) Three hours of lecture per week. Prerequisites: Molecular and Cell Biology 102 or consent of instructor. Formerly Nutritional Sciences 107. Evaluation of the chemical, physical, functional, and nutritional properties of foods and the changes which occur during preparation, processing and storage. Evaluation of the quality criteria of foods and the criteria for standards and legal requirements. (SP) Broman

107. Food Systems Organization and Management. (4) Three hours of lecture and three hours of fieldwork 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 resources, quality assurance, equipment, layout, marketing, personnel management, fiscal management. Laboratory experiences, projects and field work in institutions. (SP) Broman

150. Mechanisms of Metabolic Regulation. (3) Three hours of lecture per week. Prerequisites: Molecular and Cell Biology 102; 103 recommended. Formerly Nutritional Sciences 150. Principles of metabolic regulation in the relationship of metabolic pathways and fluxes emphasizing experimental data and understanding mechanisms of nutrient affects. Advances in methods for studying metabolism, ranging from isotope to molecular genetics techniques. This course provides the foundation for pursuing research in nutrient biochemistry/molecular biology, and for understanding nutrient and endocrine related diseases such as diabetes, hypertension, obesity, and cardiovascular disease. (F) Napoli, Sul

C114. 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 pesti- cides and biologically active principles, resistance mechanisms, and methods of evaluating their safety and activity. Also listed as Environ Sci, Policy, and Management C148. (SP) Casida

C119. Toxicology. (3) Three hours of lecture and one hour of discussion per week. Prerequisites: 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 effec- tion. Determinants of mechanisms and mechanisms of toxins, toxicogenomics, toxic effects in individuals and groups, and tools to predict toxicity. (SP) Vulpic

121. Computational Toxicology. (4) Three hours of lecture/demonstration and two hours of computer lab- oratory per week. Prerequisites: C119, Molecular and Cell Biology 100 or 102, and Computer Science 3 or 61A. Formerly Nutritional Sciences 121. Introducing the use of bioinformatics tools useful in linking the molecular structure of chemicals to the toxicity they in- duce in biological systems. Discussions on the highly interactive process of collecting, organizing, and as- similating chemistry and toxicology information and the use of computer tools and, and in interpreting 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)

135. Food Systems Organization and Management. (4) Three hours of lecture and three hours of fieldwork per week. Prerequisites: Consent of instructor. Formerly Nutritional Sciences 135. Principles of organi- zation and management applied to institutional food service systems. Production and delivery systems, management of resources, quality assurance, equipment, layout, marketing, personnel management, fiscal management. Laboratory experiences, projects and field work in institutions. (SP) Broman

160. Human Nutrition: Normal Physiology and Pathophysiology of Disease. (3) Three hours of lecture and one hour of discussion per week. Prerequi- sites: 103 or Molecular and Cell Biology 102. Formerly Nutritional Sciences 160. The normal regulation of hu- man nutrient metabolism and the pathophysiological basis of common nutrition-related diseases will be discussed. Focus will be on metabolic integration in the whole or- ganism. Conditions covered will include obesity, star- vation/anorexia nervosa, diabetes, cardiovascular dis- orders, osteoporosis, anemia, alcohol nutrition during the life cycle, pregnancy, infancy, old age, and other states. (F) Hellerstein

161. Medical Nutrition Therapy. (4) Two hours of lec- ture and four hours of laboratory per week. Prerequi- sites: 103 and 160. Formerly Nutritional Sciences 161. The physiological, pathological, and biochemical basis of medical nutrition therapy for human conditions and diseases are studied. Students apply these concepts through completion of case plans, case studies, product analyses, supermarket surveys, and calculations for enteral and parenteral nutrition support. Current re- search findings and controversies are discussed. (SP) Mead

161A. Medical Nutrition Therapy. (4) Four hours of lecture per week. Prerequisites: 103 and 160. Formerly Nutritional Sciences 161A. The physiological, pathological, and biochemical bases of medical nutrition therapy for human condi- tions and diseases are studied. Students apply these concepts through completion of case plans, case studies, product analyses, supermarket surveys, and cal- culations for enteral and parenteral nutrition support. Current research findings and controversies are dis- cussed. (SP) Mead

165. Human Nutrition Research. (1) One hour of lec- ture/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 re- search ethics, quality control, selection of dietary as- sessive systems, and sources of data 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: 10 recommended; up- dating regional nutritional sciences 166. This course addresses basic nutrition in the context of the community. It explores nutrition pro- grams that serve various segments of the population and the relationships of nutrition policy and research with policy at the local, national, and international levels. Community assessment is used as the basis for pro- gram planning, implementation, and evaluation. The needs of special population groups (infants, children, women, and the elderly) are considered and questions of food security are investigated. (F) Hudson

170. Experimental Nutrition Laboratory. (4) Stu- dents will receive no credit for 170 after taking 171. Six hours of laboratory, one hour of lecture, and one hour of discussion per week. Prerequisites: 103 and 103A, 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) Stu- dents will receive no credit for 171 after taking 170. One hour of laboratory, one hour of discussion, and six hours of laboratory per week. Prerequisites: 103, 110, Molecular and Cell Biology 142 (may be taken con- current), and a course in statistics. Formerly Nutri- tional Sciences 171. Basic principles and techniques used in human and animal nutrition and toxicology re- search. Students design, execute, and analyze ex-
190. Introduction to Research in Nutritional Sciences. (1) One hour of lecture/discussion per week. Prerequisites: 103. Formerly Nutritional Sciences 190. Students will be asked to prepare an oral and written report on a topic selected from the current research literature in nutritional sciences. (F,SP) Staff

192. Junior Seminar in Dietetics. (1) One hour of lecture/discussion per week. Prerequisites: Upper division standing. Formerly Nutritional Sciences 192. This seminar course explores 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) Hudson

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) One hour of lecture and one hour of discussion per week. Prerequisites: Upper division standing. Formerly Nutritional Sciences 194. This course will cover the major classes of nutrients and their various functions, the area of genomics as it is expected to affect practice, professional ethics in the changing health care environment, reimbursement for professional services, legislation related to the field of dietetics, and other emerging issues. (SP) Hudson

H196. Honors Research. (2-4) Course may be repeated for credit. Prerequisites: Consent of instructor 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 consent of instructor: enrollment in department honors program. Formerly Nutritional Sciences H196. Individual laboratory research followed by a written report under the supervision of a staff committee. (F,SP) Staff

197. Field Study in Food and Nutritional Sciences. (1-3) Course may be repeated for credit. Prerequisites: Three hours field study per week per unit. Must be taken on a pass/no pass basis. Formerly Nutritional Sciences 197. Supervised experience in off-campus organizations relevant to specific aspects of foods and nutritional sciences. 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/no pass 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. 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

Graduate Courses

200. Advanced Organismal Nutrition and Metabolism. (3) Three hours of lecture/discussion per week. Prerequisites: 103, 160, and Molecular and Cell Biology 102D equivalent. Formerly Nutritional Sciences 200. Critical analysis of concepts and research methods relating to nutritional metabolism and its regulation in intact organisms is studied. Areas covered include the basics of nutrition, components and nutritional assessment, integration of metabolic pathways, research techniques, nutritional diseases, and specific topics such as calcium, vitamins, and trace elements. (SP) Hellerstein

201. Metabolic Regulation. (4) Four hours of lecture per week. Prerequisites: Consent of instructor. Formerly Nutritional Sciences 201. Principles of metabolic 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 isotopic techniques. (F) Staff

C210. Dietary Determinants of Cancer, Heart Disease, and Aging. (3) Three hours of lecture per week. 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, repair, 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 Molecular and Cell Biology 2209. (SP) Ames

211A-211B. Introduction to Research in Nutritional Sciences. (4-8-4) One hour of discussion and four hours of laboratory per week per unit. Credit and grade will 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 research under the direction of individual faculty members: an introduction to experimental methods and research approaches in areas of nutritional sciences. (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 and data encountered in nutrition research. Assumptions and appropriateness of chi-square tests, T-tests, ANOVA, correlation and regression, multiple comparison procedures and non-parametric procedures will be examined. (SP) Hudes

C219. 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 for risk assessment, and target organ toxicity. Also listed as Public Health C270B. (F) M. Smith

220. Molecular Toxicology. (4) Three hours of lecture and one hour of discussion per week. Prerequisites: 103, 110, C119 or consent of instructor. 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 cellular components involved in chemical exposure from entry to effect to exit. Topics include metabolism and mechanisms of toxins, toxicogenomics, toxin effects in individuals and groups, and tools to predict toxicity. (SP) Vulpe

250. Mechanisms of Metabolic Regulation. (4) Three hours of lecture and one hour of discussion per week. Formerly Nutritional Sciences 250. Principles of metabolic regulation in higher animals. Integration of metabolic pathways and fluxes emphasizing experimental data and understanding mechanisms of nutrient effects. Advances in methods for studying metabolism, ranging from isotopic to molecular genetics techniques. This course provides the foundation for pursuing research in nutrient biochemistry/molecular biology, and for understanding nutrient and endocrine related diseases such as diabetes, birth defects, osteoporosis, obesity, and cardiovascular disease. (F) Napoli, Sul

290. Advanced Seminars in Nutritional Sciences. (1-2) Course may be repeated for credit. One to two hours of seminar per week. Prerequisites: Graduate standing. Formerly Nutritional Sciences 290. Advanced study of topics in nutritional sciences. 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: Graduate standing. Formerly Nutritional Sciences 292. Presentations by graduate students of research proposals and results of their research. Participation in discussion and evaluation of others’ presentations is required. (F,SP) Staff

293. Research Seminar. (1) One hour of lecture/discussion per week. Must be taken on a satisfactory/unsatisfactory basis. Prerequisites: Graduate standing or consent of instructor. Formerly Nutritional Sciences 293. Presentation and discussion of current faculty research projects and experimental techniques in nutritional sciences. Intended primarily for first year graduate students. (F) Staff

298. Directed Group Study. (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 sciences. Topics will vary depending on interests of qualified graduate students and availability of staff. (F,SP) Staff

299. Nutritional Sciences and Toxicology Research. (1-12) Course may be repeated for credit. Approximately four hours of research per week per unit. Prerequisites: Graduate standing and consent of instructor. Formerly Nutritional Sciences and Toxicology 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 for candidates for the Ph.D. (F,SP) Staff

Professional Courses

301. Professional Preparation: Teaching in Nutritional Sciences. (1-2) One hour of lecture/discussion per week per unit. Prerequisites: Consent of instructor. Formerly Nutritional Sciences 301. Creative approaches to teaching nutrition to diverse audiences are emphasized. Participants will identify needs of target populations, formulate educational objectives, design and/or use motivational teaching strategies, and evaluate the impact of their teaching on knowledge, attitudes, and behavior. Undergraduates may teach nutrition to elementary school children. Graduates may become teaching assistants. (F) Bjeldanes, Ikeda

302. Professional Preparation: Supervised Teaching Experience in Nutrition. (1-4) Course may be repeated for credit. Three hours of supervised teaching experience per week per unit. Prerequisites: 301 (may be taken concurrently) and consent of instructor. Formerly Nutritional Sciences 302. Practical supervised experience in teaching nutrition and toxicology at the university level; planning, presentation, and evaluation of instructional units. (F,SP) Bjeldanes
Ocean Engineering
(College of Engineering)

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: 350 Minor Hall #2020, (510) 642-3414
Office of Admissions: 397 Minor Hall #2020, (510) 642-9937
http://vision.berkeley.edu

Robert B. Mandell, O.D., Ph.D.
Associate Dean for Basic Sciences: Suzanne Fleisch, O.D., Ph.D.
Director of Resident Programs: Christine S. Wilmer, O.D., Ph.D.

Office of Admissions: 397 Minor Hall #2020, (510) 642-9937
http://vision.berkeley.edu

Graduate Program in Vision Science
Office of Admissions: 524 Minor Hall, (510) 642-9804
http://vision.berkeley.edu/VSP

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 offers a comprehensive and comprehensive education in the field of optometry.

 affiliated

- B prefix=language course for business majors
- C prefix=course satisfies R& requirement
- A prefix=course satisfies AC suffix=course satisfies American cultures requirement

"Professor of the Graduate School"
"Recipient of Distinguished Teaching Award"
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 visual 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, including responsibility for surgical pharmaceutical treatment of eye disorders and diseases.

Doctors of Optometry are educated in the sciences of anatomy, zoology, chemistry, physics, mathematics, neurology, bacteriology, microbiology, disease processes and detection, pharmacology, behavioral science, social science, public health, and many other related fields. The school provides four years of 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, cell biology, physiology, microbiology and virology, neuroanatomy, the psychology of vision, vision science, optical optics, ophthalmic optics, pharmacology, and theoretical and practical anatomy. Second and third years are devoted to the science of optometry and the acquisition of skills in examination procedures. Though clinic participation is involved in all four years, an increasingly important role in patient care begins in the summer preceding the third year. The fourth year is devoted to primary care practice of optometry and the detailed study of specialized 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's programs, please consult the Announcement Booklet for the School of Optometry, which is available from the Admissions Office, School of Optometry, University of California, Berkeley, 397 Minor Hall #2020, Berkeley, CA 94720-2020, or send e-mail to student_affairs@optometry.berkeley.edu.

Optometric Residency Program

A one-year Optometric Residency program is available for graduate optometrists who want to expand their skills in one or more clinical areas and/or seek training in specialty areas. The areas of study include binocular/pediatric vision, primary care optometry, low vision, contact lenses, and ocular pathology. Special combined or individual programs may be considered.

For further information about the Optometric Residency program, please contact the Residency Director, 2222 Bancroft Way #2020, Berkeley, CA 94720-2020 or send e-mail to cwilmer@optomt.berkeley.edu.

Vision Science Graduate Program (M.S. and Ph.D. Degrees)


Faculty link: http://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 biology, physiology, pharmacology, and neurophysiology of the retina and visual pathways, computational vision, clinical aspects of vision, and more. The graduate program 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 medicine or optometry.

For further details about the requirements for the graduate program, please contact the Office of Student Affairs at http://vision.berkeley.edu. To contact our admissions office, please e-mail vision@spectacle.berkeley.edu or write to Student Affairs Office, Group in Vision Science, University of California, Berkeley, 524 Minor Hall #2020, Berkeley, CA 94720-2020.

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 public health implications for society—e.g., myopia, cataracts, diabetic hypertensive eye disorders, developmental disorders (e.g., lazy eye), and environmentally induced disease and disorders (solar eye burns, cataracts). Major approaches to the prevention, diagnosis, and treatment of common disorders will be addressed in terms of the biological and optical sciences underlying the treatment or prevention. Impact of eye care on society and health and care delivery will be examined. (F,SP)

Prerequisites: 430A (Offered Summer Session only). Staff

C198. Group Studies. (2) Two hours of lecture per week. Must be taken on a pass/not passed basis. Prerequisites: 430A (Offered Summer Session only). Advanced topics in specialty areas. (F,SP) Staff

Graduate Courses

200A. Clinical Examination of the Visual System. (5) Two hours of lecture and six hours of laboratory per week. Formerly 100A. Fundamentals of the optometric examination. Case history, visual acuities, objective and subjective methods of determining refractive status. Basic examination of anterior ocular structures and the ocular fundus; perimeter. (F)

200B. Clinical Examination of the Visual System. (5) Two hours of lecture and six hours of laboratory per week. Formerly 100B. Classification and epidemiology of refractive errors, evaluation of accommodative and binocular status. Topometry, advanced techniques of examining the posterior pole, evaluation of visual pathway function. (SP)

200C. Clinical Examination of the Visual System. (4) Two hours of lecture and four hours of laboratory per week. Prerequisites: 200B. Formerly 100C. Case analysis of refractive, accommodative, and binocular anomalies. Pediatric examination techniques. Advanced methods of examining anterior and posterior ocular tissues; anterior chamber angle evaluation. (F)

200D. Clinical Examination of the Visual System. (4) Two hours of lecture and four hours of laboratory per week. Prerequisites: 200C. Formerly 100D. Modification of the examination sequence for specific patient needs: Evaluation and management of tear disorders; analysis of vision with cataract. Patient management and professional communications; legal and ethical issues; managed care and optometry. (SP)

222A. Optics of Ophthalmic Lenses. (3) Three hours of lecture and two hours of laboratory per week. Prerequisites: Vision Science 203A-203B. Formerly 122A. Optical and physical characteristics of ophthalmic lenses, to include spherical and aspheric surface of single and multifocal lens designs, and ophthalmic prisms. Lens power measurement methods, 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: 222A. Formerly 122B. Ophthalmic lens aberrations and minimization. Ophthalmic lens designs relating to anisometropia, anisotropia, and high refractive error correction. 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 202B. 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. Neuromuscular, cardiovascular, endocrine, pulmonary, and gastrointestinal and systemic and ocular disease and their ramifications 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 optometric physician in the health care system will be emphasized. (F)

230A-230B. Graduate General Clinical Practice. (2-6-2) Course may be repeated for credit. Four hours of clinic per credit hour. Prerequisites: O.D. degree. General optometric practice for four hours per week per credit hour, including optometric examination, dispensing, consultation, and subsequent vision care of patients, performed independently by graduate student clinicians. (F,SP)

231A-231B. Graduate Specialty Clinics. (2-8-2) 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 217 and 219. Formerly 140. Diagnosis and treatment of developmental, congenital, degenerative, and ocular anomalies and amblyopia. Rationale and methods for treatment with lenses, prism, occlusion, and 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: 240. Formerly 141. Advanced management, diagnosis and treatment of strabismus, neurologic oculomotor anomalies, amblyopia, and other associated sensory anomalies. Assessment and management of developmental and acquired visual perceptual disorders in relationship 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: 236. Formerly 146. 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. (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 principles of low vision aids. Optometric examination and treatment of the low vision patient. Interdisciplinary rehabilitation 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, 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)

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 response to 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 4th Quarter Lecture series in Contact Lenses (12 hours on a Saturday and Sunday). (SP)

260B. Contact Lenses: Principles and Practice. (2) Two hours of clinical preceptorship and one hour of independent study per week. Must be taken on a passed/not passed basis. Prerequisites: 260A. Formerly 160B. Continuation of 160A. Evaluation and fitting contact lenses to the human eye, clinical implications. (SP)

270. Ethics and the Practice of Optometry. (2) Two hours of lecture per week. Prerequisites: 200D. Formerly 170. Examination of ethical issues affecting the practice of Optometry. Practice options, practice administration, financial aspects, and maintenance of an optometric practice. Epidemiological trends and health care policy. (SP, F)

281A-281B. Graduate Clinical Rounds. (1-3;1-3) Course may be repeated for credit. Seminar/patient demonstration. Must be taken on a satisfactory/un satisfactory basis. Prerequisites: O.D. degree. Demonstration and discussion of the diagnosis, etiology, prognosis, and treatment of selected clinical cases. (F,SP)

290A-290B. Optometry Research Project. (1;1) One hour of lecture and one hour of discussion per week. Credit and grade to be awarded on completion of sequence. Must be taken on a passed/not passed basis. Prerequisites: Formerly 190A-190B. Elements of a research proposal. Fundamentals of scientific inquiry. Experimental design and data analysis. (F,SP) Cohn

291A-291B. Optometry Research Project. (1) One hour of discussion per week. Must be taken on a passed/not passed basis. Credit and grade to be awarded on completion of sequence. Prerequisites: 290A-290B. Formerly 191A-191B. Thesis research for optometry students. Presentation of research results. (F,SP) Cohn

292A-292B. Graduate Optometry Seminar. (1-2;1-3) Course may be repeated for credit. Seminar. Must be taken on a satisfactory/un satisfactory basis. Prerequisites: O.D. degree. Graduate seminars on selected topics in clinical optometry. (F,SP)

296A-296B. Independent or Group Studies. (1-1;1-6) Course may be taken for children and adults. 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 of clinical optometry. (F,SP) Professional Courses

430B-430C. Optometry Clinics. (9) Two hours of care per week. Prerequisites: 226. Formerly 170B. Continuing clinical experience in the care of patients. (Min. a minimum of 16 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 screening of 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 optometric informatics related to ocular disease. (F,SP) Peng

440B-440C. Advanced Optometry Clinic. (9) Two hours of seminar per week and a minimum of 22 hours of clinic per week. Prerequisites: 440A and 441A. Examination of patients in a primary care setting. Diagnosis, prognosis, treatment, patient management and follow-up. (F,SP)

441B-441C. Specialty Clinics. (7-9) 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, opthalmic optics, and environmental and occupational vision. (F,SP)

450A-450B. Grand Rounds and Seminar. (2;2) Two hours of discussion per week. Prerequisites: 440A. Formerly 450-450C. 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. (1-4) May be taken on a passed/not passed basis. Prerequisites: Consent of instructor. Independent study. (F,SP) 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. 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: Biology, Optometry, Public Health, and Social Welfare. (F,SP) Timiras

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 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 for 4 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) 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 requirements apply; see the introductory courses and Curricula section of this catalog. (F,SP) Staff

B prefix=language course for business majors
C prefix=cross-listed course
H prefix=honors course
R prefix=course satisfies R & R requirement
AC suffix=satisfies American cultures requirement
†Recipient of Distinguished Teaching Award
Professor of the Graduate School

Optometry / 393
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 the optics of lenses, mirrors, and prisms. Thin lens eye model, magnification, astigmatism, prism properties of lenses, thick lenses. (F)

203B. Optical System and Physical Optics. (4) Three hours of lecture, two hours of laboratory, and one hour of discussion per week. Prerequisites: 203A, Formerly 102. Theoretical and experimental studies of the retina and visual system. Emphasis on primate vision. Computer-based laboratory. (F,SP)


206A. Anatomy and Physiology of the Eye and Visual System. (4.5) Three and one-half hours of lecture and three hours of laboratory per week. Formerly 106A. Structure and function of the tissues of the eye, ocular appendages, and the central visual pathways. Basic concepts of physiology, neurology, embryology, 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)

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, neurology, embryology, 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. (4) Four hours of seminar for six weeks and one-half hours of laboratory per week. Formerly 100. Problem-based learning approach using clinical case examples. Continuation of 206A-206B. (F,SP)

212A. Optics and Dioptrics of the Eye. (2) Three hours of lecture per week for five weeks plus library assignments. Prerequisites: Consent of instructor. Introduction for graduate students to basic principles of classical and modern geometric optics (thin lens systems, mirrors, prisms, apertures, and stops) and physical optics (interference, diffraction, and polarization) with emphasis on dioptrics of the human eye (including schematic eyes, aberrations, and entoptic phenomena). (F)

212B. Visual Neurophysiology and Development. (2) Three hours of lecture per week for five weeks plus library assignment. Prerequisites: Consent of instructor. Introduction for graduate students to the anatomy and physiology of the visual system. Development and plasticity of the same visual pathways will also be covered. Evidence and implications will be explored from controlled rearing studies and procedures of abnormal visual experience. (F)

212C. Spatial Vision and Machine Vision. (2) Three hours of lecture per week for five weeks plus library assignment. Prerequisites: Consent of instructor. Introduction for graduate students to human spatial vision. Contrast sensitivity, visual acuity and spatial localization. Machine vision analogues and models of visual processing of spatial information. (F)

212D. Anatomy and Vegetative Physiology of the Eye. (2) Three hours of lecture per week for five weeks. Prerequisites: Consent of instructor. Introduction for graduate students to a general survey of the sensory, autonomic, and anterior segments of the eye, including the ciliary muscle, and neuroanatomy of the eye. Vegetative physiology of the cornea and tear film, aqueous humor, crystalline lens, vitreous humor, epithelial tissue (e.g. ciliary body and retina), and photoreceptors. (F,SP)

212E. Color Vision and Visual Sensitivity. (2) Three hours of lecture per week for five weeks. Prerequisites: Consent of instructor. Introduction for graduate students to sensory aspects of light and color vision including mathematical analysis underlying the inference of 3d scene reconstruction from 2d retinal images. Psychophysics of color, light and dark adaptation, spatial contrast sensitivity, spatial resolution, spatiotemporal 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 where students will register for separately. Also listed as Psychology C215A, Computer Science C293A, and Molecular and Cell Biology C264A.

212F. Spatial and Binocular Vision, Eye Movements, and Motion Perception. (2) Three hours of lecture and library assignment per week for five weeks. Prerequisites: Consent of instructor. Introduction for graduate students to human spatial vision including contrast sensitivity, visual acuity, and spatial localization. Introduction to motion perception, and motor and sensory aspects of binocular vision including pursuit, vergence, and saccadic eye movements, accommodation, stereopsis, and binocular space perception. Perception of real and apparent motion. (SP) Banks, Malik, Schor

212G. Molecular Genes of Vertebrate Eye Development and Diseases. (2) 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 to teach the molecular basis of vertebrate eye development and related disease. This course will cover some of the basic principles of molecular and cell biology, commonly used techniques and experimental approaches, as well as the biological mechanisms for vertebrate eye development and related eye diseases. Recent progress in identifying important ocular genes and the approaches used to identify them will be discussed. (SP) Gong

215. Visual System Development. (2) Two hours of lecture and five hours of laboratory per week for ten and one-half weeks. Development of the eye and visual system. Normal development of the eye, retina, and central visual pathways. Effects of visual deprivation. Assessment of optical, neural, and network function. Refraction and refractive error using infants and children. Development of visuomotor function, spatial vision, color vision, binocular vision, and depth perception. (F)

216. Color Vision. (2) Course may be repeated for credit with consent of instructor. Two hours of lecture per week. Prerequisites: Consent of instructor. Selected topics from color vision mechanisms, specification, and discrimination, psychophysics and neurophysiology of color processing. Color and brightness perception. Stiles-two-color incremental threshold measurements, interaction of color and form, and color vision anomalies. Also listed as Psychology C216B.

217. Oculomotor Functions and Neurology. (2) One and one-half hours of lecture and ten hours of laboratory per week. Prerequisites: 203B or consent of instructor. Formerly 117. Neuro-anatomical pathways for the control of eye position and movement. gaze hold- ing, image stabilization and tracking eye movement systems; oculomotor signs of disorders of the central nervous system (palsies, nystagmus, ophthalmoplegia, cerebellar apraxia, etc.); eye movements near visual fixation, visual-motor response and the synergistic coupling of accommodation and convergence; binocular mis-alignment (heterophoria and fixation disparity); and presbyopia. (SP)

219. Binocular Vision and Space Perception. (2) One and one-half hours of lecture and ten hours of laboratory per week. Prerequisites: 203A-203B. Formerly 118. Perception of space, direction, and distance. Binocular retinal correspondence, horopters, differential binocular summation, vergence and vergence movements, depth perception, and anthropometry. (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 processing, psychophysical measurements, visual sensitivity, color vision, and the estimation of disparity and motion. Introduction to front-end visual processing in mammalian retina. Basic optics, anatomy of retina, lateral geniculate nucleus, and primary visual cortex. Psychophysics of color, light and dark adaptation, spatial contrast sensitivity, spatial resolution, spatiotemporal 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 where students will 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 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 binocular disparity, shading, texture, and image motion from motion. Geometrical analysis of these cues. Probabilistic theory for optimal combination of cues and estimation of scene properties. Relevant physiology of V1, V2, and higher areas. Also listed as Psychology 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 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, perceptual psychology, computational modeling, and neu- roscience. Specific topics include perception of color, grouping, figure-ground organization, modal and amoeboid completion, and aperture completion. 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 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 neurosciences. Also listed as Molecular and Cell
Peace and Conflict Studies / 395

Peace and Conflict Studies (College of Letters and Science)

Group Major Office: 101 Stephens Hall, (510) 642-4466
http://www.ias.berkeley.edu

Teaching Faculty
Edwin M. Epstein (Chair of Peace and Conflict Studies, Walter A. Haas School of Business)
Amy Gurwitz (Peace and Conflict Studies)
Michel Nagel (Peace and Conflict Studies)
Edith Ng (Peace and Conflict Studies)
Beth Roy (Peace and Conflict Studies)
Jerry Sanders (Peace and Conflict Studies)
Rachel Shigekane (Human Rights Center)
Sanjiv Shyam (Peace and Conflict Studies, Middle Eastern Studies)
John Wilson (Peace and Conflict Studies)
Danish Zahedi (Peace and Conflict Studies)
Darren Zook (International and Area Studies)

Program in Peace and Conflict Studies

Note: This program’s requirements are currently under review. Please contact the Group Major Office for updated information.

Peace and Conflict Studies introduces students to the study of peace, conflict, and world order from social, economic, political, historical, and ecological dimensions. Integral to the study is a critical analysis of the structures and processes of change. Students are encouraged to recognize the linkage between the academic study of peace and active participation in it.

Since the causes of conflict and the processes of peace are multifaceted and complex, students are expected to approach their study from the perspective of a number of disciplines. They must also define or develop a central theme or concentration to explore in depth. To achieve this, the major is organized into five components:

- Foreign Language Requirement. All PACS students must be able to demonstrate proficiency in any single modern language (other than English) equivalent to four college-level semesters. Note: Languages accepted by the College of Letters and Science are not automatically accepted by the PACS major. Please check with an adviser for eligible languages.
- There are a number of ways students can fulfill the four-semester language requirement, depending on their backgrounds and ability.
- (1) Advanced placement test. High School Advanced Placement scores of 5 constitute this requirement. A score of 4 will place you into the fourth-semester college-level course. A score of 3 will place you into the third-semester college-level course.
- (2) Course work. Any combination of high school courses, college courses, summer programs, or college-level study abroad programs can satisfy the language requirement. At a minimum, students must complete the fourth semester of a language course. Students in their first, second, and 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 must be taken at Berkeley; courses taken at a community college or any accredited school or university are acceptable. However, transcripts must be provided and evaluated by a staff adviser. Students who do not wish to take a proficiency exam to a staff adviser for verification and inclusion in their files. For more information, see a staff adviser concerning language study abroad.
- (3) Proficiency exam. Students whose language skills are at the fourth semester or beyond and who do not wish to take courses can opt to test out of this requirement. However, not all of Berkeley’s language departments offer proficiency exams. As of August 2004, proficiency exams were offered in the following languages: Chinese, Japanese, Korean, Arabic, Farsi, Hebrew, and Turkish. Students responsible for bringing written results of the proficiency exam to a staff adviser for verification and inclusion in their files.
- (4) Faculty certification. Students may approach any members of the Berkeley faculty who are familiar with the language and ask them to certify them at a language level equivalent to four college-level semesters. The certification must evaluate reading, writing, grammar, listening, and speaking abilities. Certification forms are available in 101 Stephens Hall. Students are responsible for bringing the signed certification form to a staff adviser for verification and inclusion in their files.
- (5) 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, get certified by a faculty member, or provide documentation (usually a transcript) that indicates in their native language at least through high school or the equivalent.

Core Courses. Two courses-PACS 100 and PACS 190-give the scope of the discipline in historical, theoretical, and practical terms.

Methods Requirement: All students must complete a course on research methodology.

Survey Areas. To provide a breadth of subject areas and the necessary proficiency for the concentration topics, students must complete one course in two of the following four subject areas: (1) global systems and regional studies; (2) human rights; (3) conflict resolution; and (4) nonviolence.

Area of Concentration. In the concentration, students pursue advanced study on a particular issue in peace studies. Concentrations can be self-defined or chosen from a list. Four courses must relate to one’s chosen area of concentration.

The Major

Core Courses—Lower Division. PACS 10 and two courses from the following list: African American Studies C15; Asian American C12AC; Business Administration 10; Development Studies C10; Economics 1, 2; Geography 4, 10, C15, 20, 40, C32, C55; History 7B, 8B, 9, 10, 11, 12, 13B, 14, 15, 16B, 16C, 16D, 18B; International and Area Studies 45; Latin American Studies 10; Near Eastern Studies C26; Political Science 2; Psychology 1; Sociology 1, 3, 3AC; Women’s Studies C15.

Upper Division. PACS 100, 190. To declare peace and conflict studies, students must have completed PACS 10. Students must declare no later than the last day of instruction of the term. Transfer students must have completed one semester of course work at Berkeley before declaring. A detailed description of the major requirements is available in the Teaching Program Office.

Double Majors. Double majors must be approved by the College of Letters and Science. No more that 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 course work taken at institutions outside the United States to fulfill major requirements is restricted to the equivalent of three semester-length upper division courses. Courses taken to fulfill the foreign language requirement for the major are not included in this restriction.

Transfer Courses. A maximum of three 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 three of the general education 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. To graduate with honors in peace and conflict studies, students must enroll in the two-semester honors seminar, IAS 102/118 and PACS H195, and must obtain a grade-point average of 3.6 in the major and 3.5 overall in University course work by the time they complete their undergraduate degrees. The honors seminar is taken in addition to students’ regular course work for fulfilling requirements for the major and culminates in the writing of a senior thesis. The thesis is read by the thesis class instructor and at least one other faculty member. Students are selected in consultation with the thesis class instructor. Students should go to the Teaching Program Office to ask about their eligibility for participating in the Honors Program.

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 four PACS survey areas. Applications for the minor and survey course lists are available from the IAS Teaching Program 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 college requirements apply to the PACS minor program: (1) at least three courses must be completed at Berkeley; (2) all
courses must be taken for a letter grade; (3) a mini-
group of 2.0 must be achieved in the courses used
to satisfy the minor requirements; (4) no more
than one course can satisfy requirements for both
a major and a minor; (5) minor courses must be
taken within the 130-unit maximum limit for
graduation.

Lower Division Courses

10. Introduction to Peace and Conflict Studies. (4)
Three hours of lecture and one hour of discussion per week. This course will explore the political and social
causes of war and violence and the processes that
lead to justice and peace. This course is required for
majors but non-majors are welcome. (F,SP) Sanders

124. Sophomore Seminar. (1,2) Course may be
repeated for credit as topic varies. One hour of seminar
per week per unit for the first eight weeks. Two
hours of seminar per week for eight weeks. Sections 3-4
to be graded on a letter-
grade basis; Sections 3-4 to be graded on a letter-
grade basis. A practicum using a modern method for
studying the phenomenon of globalization. Particular at-
tention will be paid to the impact of globalization on the
identities and life chances of succeeding genera-
tions in the United States and examines ques-
tions of the role of race, ethnicity, and class as prisms
that filter this process. Course also explores how dif-
f erent interpretations of democracy and nationalism
have served as a catalyst for social conflict and the
processes that lead to justice and peace. This course satisfies the American cultures requirement. (SP) Sanders

127A. Human Rights. (3) Three hours of lecture per week.
An introduction to the theory of international law and
promotion and protection of human rights. The course
will provide the opportunity to discuss and engage in
literature and major

130. Cross-Listed Topics. (1-4) Course may be
repeated for credit. Three hours of discussion per week.
Prerequisites: 124 or consent of instructor. Five special issues will be an-
alyzed in depth in the context of human rights: United
Nations; democracy and development; universality and
cultural relativism; the three regional systems; and
women’s rights. (F,SP) Staff

128AC. Human Rights and American Cultures. (4)
Four hours of lecture per week. The course analyzes
the theory and practice of human rights for three
groupings in the United States and examines ques-
tions of the role of race, ethnicity, and class as prisms
that filter this process. Course also explores how dif-
f erent interpretations of democracy and nationalism
have served as a catalyst for social conflict and the
processes that lead to justice and peace. This course satisfies the American cultures requirement. (F,SP) Sanders

130. Cross-Listed Topics. (1-4) Course may be
repeated for credit. Three hours of discussion per week.
Prerequisites: 124 or consent of instructor. Five special issues will be an-
alyzed in depth in the context of human rights: United
Nations; democracy and development; universality and
cultural relativism; the three regional systems; and
women’s rights. (F,SP) Staff

128AC. Human Rights and American Cultures. (4)
Four hours of lecture per week. The course analyzes
the theory and practice of human rights for three
groupings in the United States and examines ques-
tions of the role of race, ethnicity, and class as prisms
that filter this process. Course also explores how dif-
f erent interpretations of democracy and nationalism
have served as a catalyst for social conflict and the
processes that lead to justice and peace. This course satisfies the American cultures requirement. (F,SP) Sanders

135. Special Topics in Regional Conflict. (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 interdisci-
plinary study of geo-political regions and the sources
of conflict by examining the evolution of the major
actors involved. 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, par-
ticularly community disputes. Special emphasis will be
given to the technique and artifice of diffusing/de-es-
calating volatile and angry conflict. (F,SP) Sanders

154. Multicultural Conflict Resolution. (4) Four hours of lecture per week. Prerequisites: 150 and 153,
or consent of instructor. This course will investigate the
special issues involved with facilitating resolution of
cross-cultural conflicts. Topics will include cultural
awareness, conflict resolution, and understanding of
the role of culture. (F,SP) Sanders

155. Ethics of Conflict Resolution. (4) Four hours of lecture per week. This course examines ethical
issues and perspectives in relation to peace and conflict
studies, with emphasis on communication and conflict
resolution processes and special emphasis on ana-
lizing the third party intervenor’s ethical responsibil-
ities and dilemmas in facilitating collaborative conflict
resolution and appreciating cultural perspectives. This
course will use the opportunity to apply and, (F,SP)
evaluate the results of applying collaborative conflict resolution theory and models in
supervised internships. Activities and materials will be
designed to assist students with developing skill and
understanding of the role that the intervenor can play in
the completion of substantive requirements for neu-
turals. (F,SP) Nagler

164A. Introduction to Nonviolence. (3) Students will
receive 6 units for 164A after taking 164. Three hours of
lecture per week. An introduction to the subject of
nonviolence, mainly as seen through the life and work
of Mahatma Gandhi. Historical overview of nonviolence
East and the West to the American Civil Rights
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
to applied to problems of social justice and defense.
(F,SP) Nagler

164B. 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 in-
structor. The development of nonviolence since the
Civil Rights movement. Nonviolent theory and practice
seen in recent social justice movements (freedom struggles), social justice struggles, nonviolent inter-
vention across borders and protection of the environ-
ment in the emerging world of global capitalism. (F,SP)

165. Conflict Resolution, Social Change, and the
Culture of Peace. (4) Four hours of lecture per week.
Prerequisites: 150 and 153, or consent of instructor. This course will explore the
broadest sense. In particular, the course elaborates
upon the relationships among conflict resolution, social
Philosophy

(College of Letters and Science)

Department Office: 314 Moses Hall, (510) 642-2722
http://philosophy.berkeley.edu
Chair: Alan Code, Ph.D.

Professors
Janet Broughton, Ph.D.
John Campbell, D. Phil
Alan Code, Ph.D.
*Hubert L. Dreyfus, Ph.D.
Alva Noe, Ph.D.
Samuel Scheffer, Ph.D.
John R. Searle, D. Phil.
Hans Sluga, B. Phil.
Barry G. Stroud, B. Phil.
R. Jay Wallace, Ph.D.

Ernest W. Adams, Ph.D. (Emeritus)
Charles S. Chihara, Ph.D. (Emeritus)
Thompson Clarke, Ph.D. (Emeritus)
William Craig, Ph.D. (Emeritus)
Benson Mates, Ph.D. (Emeritus)
Wallace Matson, Ph.D. (Emeritus)
David Rynin, Ph.D. (Emeritus)
Frits Staal, Ph.D. (Emeritus)
Joseph Tussman, Ph.D. (Emeritus)
Bruce J. Vermazen, Ph.D. (Emeritus)

Associate Professors
Hannah Ginsborg, Ph.D.
John MacFarlane, Ph.D.
Paulo Mario Srinivas, Ph.D.
Daniel Warren, Ph.D., M.D.

Assistant Professor
Branden Fiseleson, Ph.D.

The Major

Lower Division. 12A or 14A, 25A and 25B.

Upper Division. 100; one of the following: 104, 105, 107, 115; and 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. Students must take one course from the 160-178 series and one course from the 160-187 series and three additional upper division courses.

Honors Program. With the consent of the major adviser, 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. This 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 hours of lecture per week. An introduction to the three upper division courses must be taken at Berkeley. All courses taken in the minor must be completed on a letter-graded 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

1. Individual Morality and Social Justice. 3 hours of lecture and one hour of discussion per week. Introduction to ethical and political philosophy. (F,SP) Sluga

2. The Nature of Mind. 3 hours of lecture and one hour of discussion per week. Introduction to the philosophy of mind. The nature of mind 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 hours of lecture and one hour of discussion per week. Introduction to the theory of knowledge. (F,SP)

5. Science and Human Understanding. 3 hours of lecture and one hour of discussion per week. Introduction to the Philosophy of Science.

6. Man, God, and Society in Western Literature. 3 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-interpretations.

7. Existentialism in Literature and Film. 3 hours of lecture and one hour of discussion per week. Christian, agnostic, and atheistic existentialism as expressed in the works of Dostoevsky, Melville, Kafka, Antonioni, Goddard, etc. (F,SP) Dreyfus

8. Introduction to Philosophy of Art. 3 hours of lecture and one hour of discussion per week. This course will identify the central features of art, and it will consider alternative accounts. 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) Wolleim

9. Chinese Philosophy. 3 hours of lecture per week. An introduction to Chinese philosophical thought. The man ideas of different schools of thought, including Confucianism, Taoism and Buddhism, will be presented through a study of representative thinkers and texts. Various topics will be highlighted, including: Chinese conceptions of the self, theories of human nature, accounts of the ethical ideal, and views about self-cultivation.

12A. Introduction to Logic. 3 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. (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 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 is limited to 15 freshmen.

25A. Ancient Philosophy. 3 hours of lecture and one hour of discussion per week. The history of ancient philosophy with special emphasis on the Presocratics, Plato, and Aristotle. (F) Code

C25A. Greek Philosophy and Ancient Philosophy. Nature, concepts, and origins of philosophy. (F) This course will cover the history and substance of Greek philosophy. Emphasis is on the origins and development of philosophical thought from the Presocratics through the fourth century BCE. Special attention given to Socrates,
Plato, and Aristotle. Post-fourth century, Hellenistic philosophies (especially Stoicism, Cynicism, Epicureanism, and neo-Platonism) 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 vary from semester to semester and will be individually announced. Freshman seminars are restricted to fifteen students each.

84. Sophomore Seminar. (1,2) Course may be repeated for credit as topic varies. One hour of seminar per week for fifteen weeks. One and one half hours of seminar per week for 10 weeks. Two hours of seminar per week for eight weeks. Three hours of seminar per week per unit for fifteen weeks. Sections 1-2 to be graded on a pass/drop 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 will be announced to department and semester to semester. Enrollment limited to 15 sophomores. (F,SP)

Upper Division Courses

General prerequisites: Students enrolling in any of the following upper division courses should have completed at least 8 units in philosophy. 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) Warren

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 exploration of issues in the field of moral psychology, such as: free will, weakness of will, self-deception, moral motivation, emotions, virtues, moral education. Williams

109. Freedom and Responsibility. (4) Three hours of lecture per week. A systematic examination of freedom and responsibility. The following topics will be addressed (among others): the relations between freedom of will, freedom of action, and autonomy; moral responsibility and its conditions; naturalism, minimalism, intuitions, and arguments 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 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 the course's central issues in depth. Students will write a short paper every week on the readings for the next session and a final paper of 12-15 pages. This course satisfies the American cultures requirement. Ginsborg

115. Political Philosophy. (4) Three hours of lecture per week. Analysis of political 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 issues in political philosophy. The topics 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. A survey of main topics in the logic 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

131. Philosophy of Action. (4) Three hours of lecture per week. A consideration, inter alia, of some of the following questions: What is an action? What is rational action? What is the structure of practical arguments? What is the structure of explanations of actions?

132. Philosophy of Mind. (4) Three hours of lecture per week. Mind and matter; other minds; the concept "person." (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. Prerequisites: One course in logic or consent of instructor. Language as social behavior. Language compared to other sign systems. The foundations of semantics, truth, meaning, reference. Issues of logical form in belief sentences, indirect discourse, sentences about causality, events, actions. Relations between thought and language. (F,SP)

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 metaphysical central problems—What is perception? What is the nature of perceptual consciousness? How can one fit an account of perceptual experience into a broader account of the nature of the world?—and problems at the heart of metaphysics. It is often justifiably said that the theory of perception (and especially vision) is the arena of psychology and neuroscience 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) Noe

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) MacCus

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, incompleteness theorems, Philosophical implications of these results. (F,SP) MacCus

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 validity, truth and truth functionality, quantification, and necessity. (F,SP) Staff

143. Modal Reasoning. (4) Three hours of lecture per week. Prerequisites: 12A, 14A or consent of instructor. Analyses of the concept of necessity. Investigations of philosophical issues involving necessity and modal logic. Use of modal concepts and modal logic in philosophical reasoning.


148. Probability and Induction. (4) Three hours of lecture per week. Different approaches to the foundations of probability; Inductive confirmation of scientific theories. MacCus

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 146) or Philosophical 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 emphasized vary from occasion to occasion, 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. (4) 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. (4) Three hours of lecture and one hour of discussion per week. The philosophical work of Bertrand Russell in the crucial period from 1899 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. (4) Three hours of lecture per week.

161. Aristotle. (4) Three hours of lecture per week. (F,SP) Code

170. Descartes. (4) Three hours of lecture per week. Broughton


174. Locke. (4) Three hours of lecture per week. Ginsborg

175. Berkeley. (4) Three hours of lecture per week.

176. Hume. (4) Three hours of lecture per week. (F,SP) Broughton

178. Kant. (4) Three hours of lecture per week. (F,SP) Warren

181. Hegel. (4) Three hours of lecture per week.

183. Schopenhauer and Nietzsche. (4) Three hours of lecture per week. An examination of the philosophy of Schopenhauer and Nietzsche. Sluga

184. Nietzsche. (4) Three hours of lecture per week. Sluga

185. Heidegger. (4) Three hours of lecture and one hour of discussion per week. Formerly 187. A study of Heidegger's Being and Time. Dreyfus

186A. Early Wittgenstein. (4) Three hours of lecture and one hour of discussion per week. Wittgenstein's philosophical work in the years 1913 to 1934. (F,SP) Sluga

186B. Later Wittgenstein. (4) Three hours of lecture and one hour of discussion per week. A close reading
and extended discussion of central parts of Wittgen-stein’s Philosophical Investigations. (F,SP) Stroud

187. Special Topics in the History of Philosophy. (4) Course may be repeated for credit. Three hours of lecture per week. The course’s specific content will vary from occasion to occasion but either the course will focus narrowly upon problems drawn from the work of a philosopher in the 160 to 178 series, or it will study several influential philosophers, active mainly before the twentieth century, who shared a common outlook or who were linked by other types of philosophically significant reaction to one another’s work. (F,SP)

188. Phenomenology. (4) Three hours of lecture per week. Formerly 186. Backgrounds of phenomenology and existentialism. Husserl and Merleau-Ponty. (F,SP)

189. Special Topics in Recent European Philosophy. (4) 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 philo-sophy. Its contents will vary from occasion to occasion. Possible topics include: further work in phenomenology and existentialism, the study of a particular text by an important figure in contemporary European philosophy, current French and German philo-sophy. (F,SP)

H195. Philosophy Tutorial. (4) Three hours of tutorial per week. Prerequisites: Students in Honors Program. The tutorial will center on topics and questions about which the student will seek to satisfy the thesis re-quirement of the Honors Program. (F,SP)

198. Group Study. (1-4) Course may be repeated for credit. Tutorial. One unit per weekly hour of instruction. Must be taken on a passed/not passed basis. Prerequis-ites: 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 weekly hour of instruction. Must be taken on a passed/not passed basis. Prerequis-ites: Consent of instructor. Directed study or research under the guidance the student will seek to satisfy the thesis re-quirement of the Honors Program. (F,SP)

200. First-Year Graduate Seminar. (3) Course may be repeated for credit. Two hours of seminar per week. Must be taken on a satisfied/unsatisfied 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

250. Special Studies. (1-9) Course may be repeated for credit. Two hours of laboratory per week. Prerequisites: Consent of instructor. Independent study on a satisfac-tory/unsatisfactory basis. Individualized study is planned to enable participants to de-velop and improve performance skills, gain knowl-edge and concepts relevant to the activity, receive relevant information concerning the health benef-its 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 Schedule of Classes for specific information regard-ing each semester’s offerings.

262. Individual Study for Doctoral Students. (1-8) Course may be repeated for credit. Two hours of laboratory per week. Prerequisites: Consent of instructor. Independent study 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 of candidates of the Ph.D. (F,SP)

602. Individual Studies. (1-4) Course may be repeated for credit. Course does not satisfy unit or residence requirements for doctoral de-gree. Independent study. Must be taken on a satisfac-tory/unsatisfactory basis. Prerequisites: Consent of instructor. Independent study under the direction of a member of the staff. (F,SP)

603. Independent Philosophical Studies. (1-4) Course may be repeated for credit. Course does not satisfy unit or residence requirements for doctoral de-gree. Independent study. Must be taken on a satisfac-tory/unsatisfactory basis. Prerequisites: Consent of instructor. Independent study under the direction of a member of the staff. (F,SP)

Professional Courses

301. Professional Preparation: The Teaching of Philosophy. (4) Course may be repeated for credit. Course does not satisfy unit or residence requirements for doctoral degree. Must be taken on a satisfac-tory/unsatisfactory basis. Prerequisites: Appointment as a graduate student instructor. Students will work as teachers under the guidance of a faculty member. They will attend lectures, guide classroom discussion, and participate in a workshop in teaching methods. (F,SP)

Physical Education

(College of Letters and Science)

Office: 200 Hearst Gymnasium, (510) 642-3289 http://pe.berkeley.edu

Director: M. Kathryn Scott, M.A.

Supervisor of Physical Education
M. Kathryn Scott, M.A.

Kyu Min Min, M.Ed., Ph.D. (hon.) (Emeritus)

Lecturers
Russell Ahn, M.A.

Jason Britton, M.F.A.

Justin Caraway, M.A.

Jun Hernandez, B.S.

Sue Johannessen, M.A.

Susanna Liu, Jue, M.F.A.

Toni Mar, M.S.

Richard Morris, M.S.

Mary Scooty, B.A.

Elmar Stelike, M.A.

Dini Young, A.B.

Divine Safety Officer
Jim Hayward, B.A.

Program Overview

The Physical Education Program is under the ju-risdiction of the College of Letters and Science and reports to the college through the Dean of Biolog-ical Sciences. The program consists of a wide range of physical activity classes as well as various lecture/laboratory courses described in the course listings. The physical activity offerings are designed to provide sequenced instruction in such classes as aquatics, condition, fitness, and sports. Instruction is planned to enable participants to de-velop and improve performance skills, gain knowl-edge and concepts relevant to the activity, receive relevant information concerning the health benef-its 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 Schedule of Classes for specific information regard-ing 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, Berke-ley 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 re-search, Environmental Health and Safety, the Physical Education Program, the College of Natural Resources, and the Richman Gump South Pacific Biological Research Station. A University scientific diver permit is required for permit holders described in the course listings. Prerequisites: Administration to candidacy for the doctoral degree. (F,SP)

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 condi-tioning activities is offered at the elementary level. Stu-dents select section by activity 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 condi-tioning activities is offered at the intermediate level. Students select section by activity 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 condi-tioning activities is offered at the high intermediate level. Students select section by activity 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 condi-tioning activities is offered at the advanced level. Students select section by activity 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 condi-tioning activities is offered at the high advanced level. Students select section by activity 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. Scheduled for specific time periods for specific population groups. Variety of intercollegiate sports for men. Students should select section by activity and time preferences. Students should consult the Schedule of Classes each semester to determine the particular activities available. (F,SP) Scott

7. Physical Education Activities. (.5) Course may be repeated for credit. Two hours of laboratory per week. Scheduled for specific time periods for specific population groups. Variety of intercollegiate sports for women. Students should select section by activity and time preferences. Students should consult the Schedule of Classes each semester to determine the particular activities available. (F,SP) Scott

32. Fitness for Life: Physical Adaptations to Ex-ercise. (2) One hour of lecture and three hours of lab-oratory per week. Develops the relationship between physical fitness and wellness through scientific evi-dence presented in the areas of exercise physiology and health. The body’s adaptation to programs of aero-bic conditioning and strength training are examined. Areas associated with health and fitness, including nu-trition 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

R prefix=course satisfies R&C requirement
A prefix=course satisfies American cultures requirement
B prefix=language course for business majors
C prefix=cross-listed course
H prefix=honors course

*Professor of the Graduate School
†Recipient of Distinguished Teaching Award

Locker Room Regulations and Penalties. A fine is imposed if students fail to comply with the fol-lowng 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; (c) overnight use of locker in designated areas.

Fees. A course material fee is assessed from ev-ery student enrolled in a physical education activ-ity class. The fees are listed by class in the Sched-u-le of Classes.

Lower Division Courses
Physical Science
(College of Letters and Science)
Department Office: 366 LeConte Hall
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 7 and Mathematics 11 which are required by physical science and engineering departments. Through this plan a student preparing for a career in environmental or health science can major in physical science and meet the time demands. Plan B is based on Physics 3 and Mathematics 11, 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, physics or chemistry, while also studying astronomy and geology as well as computer science. For more information about the major and department, go to http://physics.berkeley.edu.

Plan A
(Broad introduction to physical science)

Lower Division Courses
Mathematics 16A-16B, 55; Physics 8A-8B; Chemistry 1A-1B; Computer Science 3

Upper Division Courses
Physics 132; Chemistry 130A-130B; Vision Science 203A (formerly Vision Science 101); Statistics 131A. 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 physics courses 105, 110A, or 137A, Chemistry 120A or (for students well-enough prepared) 104A. Electives in physical sciences, mathematics, and statistics with approval of the adviser to complete a total of 24 upper division units. Up to 8 upper-division units in engineering and/or computer science will be accepted with approval of the major adviser.

Honor Programs
Students with a grade-point average both overall and in the major of at least 3.3 may apply 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.

Physics
(College of Letters and Science)
Department Office: 366 LeConte Hall, (510) 642-7166
Chair: Marjorie D. Shapiro, Ph.D.
University Professors
Marvin L. Cohen, Ph.D. University of Chicago. Theoretical condensed matter physics
Robert T. Birgeneau, Ph.D. Yale University. Experimental condensed matter, solid state physics
Carlos B. Sasturain, Ph.D. University of California, Berkeley. Biophysics. Physical chemistry
David C. Chrystie, Ph.D. University of Paris. Experimental condensed matter physics
Raymond Y. Chiao, Ph.D. Massachusetts Institute of Technology. Quantum optics
Steven Chu, Ph.D. University of California, Berkeley. Atomic, molecular, and biological physics
John Clarke, Ph.D. University of Cambridge. Experimental condensed matter physics
Michael Crommie, Ph.D. University of California, Berkeley. Experimental condensed matter physics
Marc Davis, Ph.D. Princeton University. Astrophysics
Robert Dynes, Ph.D. McMaster University. Experimental condensed matter physics
Joel Feirman, Ph.D. Massachusetts Institute of Technology. Experimental condensed matter physics
Roger W. Falcone, Ph.D. Stanford University. Quantum electronics and atomic physics
Stuart J. Freedman, Ph.D. University of California, Berkeley. Nuclear physics
Mark S. R. Gladstone, Ph.D. University of Paris. Theory of Elementary particles
Richard Genzel, Ph.D. University of Bonn. Experimental astrophysics
Donald A. Gaposchkin, Ph.D. California Institute of Technology. Psychophysics and theoretical neuroscience
*Gerson Goldhaber, Ph.D. University of Wisconsin. High energy particle experimental physics
Lawrence J. Hall, Ph.D. Harvard University. High energy theory, cosmology
Martin B. Hapner, Ph.D. Harvard University. Theory of Elementary particles
Frank H. Heald, Ph.D. Stanford University. Condensed matter, magnetism, thermodynamics, film growth
Robert G. Jacobsen, Ph.D. Stanford University. Experimental high-energy physics
Edward Knobloch, Ph.D. Harvard University. Theoretical astrophysics, nonlinear dynamics
Doug Lee, Ph.D. Massachusetts Institute of Technology. Theoretical condensed matter physics
Christopher McKee, Ph.D. University of California, Berkeley. Atomic physics
Robert Lin, Ph.D. University of California, Berkeley. Experimental and high energy astrophysics and space physics
Robert G. Littlejohn, Ph.D. University of California, Berkeley. Nonlinear dynamics, theoretical plasma physics
Steven G. Louie, Ph.D. University of California, Berkeley. Theoretical condensed matter physics
Kam-Biu Luk, Ph.D. Rutgers University. Experimental high energy physics
*Robert M. Lyth, Ph.D. University of California, Berkeley. Atomic physics
*Forrest S. Mozer, Ph.D. California Institute of Technology. Space physics
Richard A. Muller, Ph.D. University of California, Berkeley. Experimental physics, astrophysics
Hitoshi Murayama, Ph.D. University of Tokyo. Theory of elementary particles
Joseph A. Orenstein, Ph.D. Massachusetts Institute of Technology. Condensed matter physics
Richard S. Packard, Ph.D. University of Michigan. Low temperature physics
Saul Perlmutter, Ph.D. University of California, Berkeley. Cosmology and experimental astrophysics
*Paul L. Richards, Ph.D. University of California, Berkeley. Particle astrophysics and experimental cosmology

* Senior faculty
†Member of the Graduate Group in Physics
‡Member of the Graduate Group in Materials Science

Professors
Jonathan Arons, Ph.D. Harvard University. Astrophysics and plasma physics (Astronomy)
Robert T. Birgeneau, Ph.D. Yale University. Experimental condensed matter, solid state physics
Carlos B. Sasturain, Ph.D. University of California, Berkeley. Biophysics. Physical chemistry
David C. Chrystie, Ph.D. University of Paris. Experimental condensed matter physics
Raymond Y. Chiao, Ph.D. Massachusetts Institute of Technology. Quantum optics
Steven Chu, Ph.D. University of California, Berkeley. Atomic, molecular, and biological physics
John Clarke, Ph.D. University of Cambridge. Experimental condensed matter physics
Michael Crommie, Ph.D. University of California, Berkeley. Experimental condensed matter physics
Marc Davis, Ph.D. Princeton University. Astrophysics
Robert Dynes, Ph.D. McMaster University. Experimental condensed matter physics
Joel Feirman, Ph.D. Massachusetts Institute of Technology. Experimental condensed matter physics
Roger W. Falcone, Ph.D. Stanford University. Quantum electronics and atomic physics
Stuart J. Freedman, Ph.D. University of California, Berkeley. Nuclear physics
Mark S. R. Gladstone, Ph.D. University of Paris. Theory of Elementary particles
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Saul Perlmutter, Ph.D. University of California, Berkeley. Cosmology and experimental astrophysics
*Paul L. Richards, Ph.D. University of California, Berkeley. Particle astrophysics and experimental cosmology

*****
Charles V. Shank, Ph.D. University of California, Berkeley. 
Elementary condensed-matter chemistry, physics, and engineering.

Marjorie D. Shapiro, Ph.D. University of California, Berkeley. 
Elementary particle physics.

Yoav Rosen, Ph.D. Harvard University. Condensed matter physics, quantum and nonlinear optics.

James L. Siegel, Ph.D. Stanford University. Elementary particle physics.

G. Michael Green, Ph.D. Massachusetts Institute of Technology. Experimental astrophysics.


Makiko Suzuki, Ph.D. University of Tokyo. Theory of condensed matter physics.

Martin White, Ph.D. Yale University. Theoretical astrophysics.

Jonathan S. Alm, Ph.D. University of California, Berkeley. Theoretical beam and plasma physics.

Peter Y. Yu, Ph.D. Brown University. Elementary condensed matter physics.

Alex Zettl, Ph.D. University of California at Los Angeles. Condensed matter physics.

*Bruno Zumino, Ph.D. University of Rome. Theory of elementary particles.


Korkut Bardakci, Ph.D. (Emeritus).

Robert R. Brown, Ph.D. (Emeritus).

Robert R. Brown, Ph.D. (Emeritus).

William Chinnowsky, Ph.D. (Emeritus).

William Y. Kao, Ph.D. (Emeritus).

Leroy T. Kerth, Ph.D. (Emeritus).

Erwin L. Hahn, Ph.D. (Emeritus).

Geoffrey F. Chew, Ph.D. (Emeritus).

†J. D. Jackson, Ph.D. (Emeritus).

Dmitry Budker, Ph.D. University of California, Berkeley. Theoretical condensed-matter physics.

Herbert M. Steiner, Ph.D. Theoretical condensed-matter physics.

Allan N. Kaufman, Ph.D. Experimental condensed-matter physics.


Mina Aganagic, Ph.D. California Institute of Technology. Theoretical high energy particle physics.

Assistant Professors

Adrian T. Lee, Ph.D. Stanford University. Experimental condensed-matter physics.

Ori Ganor, Ph.D. Tel Aviv University. Theoretical high energy physics.

George H. Trilling, Ph.D. Theoretical astrophysics.

Mark W. Strovink, Ph.D. Princeton University. Elementary condensed-matter chemistry, physics, and materials science.

The Major

The physics major is designed to give the student a broad understanding of the fundamentals of physics. The emphasis is, therefore, on this general understanding rather than on specialized skills, although some specialized courses in physics and the sciences are available to the student. Those choosing 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 school in a number of scientific fields, and others have gone on to jobs in academic, industrial, and governmental laboratories. For information about the major and department, go to http://physics.berkeley.edu.

Lower Division Courses. Physics 7A-7B-7C (regular or honors) have been offered for students with suitable preparation). Mathematics 1A-1B and 53, 54. Those who have not taken a substantial chemistry course in high school are urged to take the corresponding course. Those not familiar with a computer programming language 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 prerequisites to all upper division courses except Physics 132. Upper division courses may have scheduled one additional hour to the three hours of lecture. The Schedule of Classes: Physics 105, 110A: 112, 137A-137B: 6 units of 111: one additional course from the following list chosen with the approval of the major adviser: 108, 110B, 124, 129A-129B, 138, 139, 141A-141B, 142, 150, 1561 (cross listed with astronomy), 177, C191. These options will give the student an extended introduction to some areas of current research. Physics 110B is strongly recommended for students who plan to 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 school. Additional mathematics from among Mathematics 128, 129A-129B, 131A-131B is desirable. For detailed information about Physics 132, 185 is recommended. Competence in the use of computers is desirable.

Honors Program. Students with an overall grade-point average of 3.3 or higher in courses in the major may be admitted to the honors program. An honors major adviser should be consulted before the student’s last residence. This program requires completion of the major, at least one semester of Physics 1H10 and a senior thesis, H195A-H195B.

Biophysics. Students who wish to obtain a broad introduction to the physical sciences and their applications to biology are referred to the Department of Physics and the Department of Molecular and Cell Biology. There is no biophysics undergraduate degree major 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 Engineering Physics major is open only to students registered in the College of Engineering.)

Field Major in Physical Science. Students interested in this major should see the Physical Science section of this catalog for a description of the major program.

The Minor

The Department of Physics has adopted a physics minor program. Students in the College of Letters and Science and in some of the professional schools or more minors in their choice, normally in a field both academically and administratively distinct from their major. The minor will conform to the College of Letters and Science distribution requirements and will consist of the following coursework:

- Prerequisites. Physics 7A, 7B, 7C (or their equivalents). Math 1A, 1B, 54, (or their equivalents). These courses must be taken for a letter grade.
- Physics 7A-7B-7C (or their equivalents) must be passed with a letter grade of C or better. The student must achieve a minimum GPA of 2.0 in the seven courses.

Minor Requirements. Physics 137A; Physics 110A or Physics 105. Three additional upper division physics courses to total at least 9 units for an upper division physics unit total of at least 17 units.

All upper division physics courses must be taken for a letter grade. A minimum of three upper division courses must be completed at Berkeley. An overall minimum GPA of 2.0 is required in upper division courses applied to the minor program.

Students who have completed the requirements for the minor will be required to furnish transcripts (official or unofficial) to the undergraduate assistant (in 368 Le Conte Hall) to show their work and grade-point average in physics and math. After completing the completion petition (available in 368 Le Conte Hall) the students will be directed to a physics major adviser who will approve the completion of the minor program.

Students may petition for a minor in physics from the time that the requirements are complete until the student graduates from the College of Letters and Science.

For more information regarding this program, please contact the undergraduate student affairs officer in 368 LeConte Hall.

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 will not consider applications from students who intend to work toward a 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 Exams. Examinations date. For detailed information concerning the physics graduate program, including admissions, go to www.physics.berkeley.edu/academics/grad/gradintro.shtml, or consult the Graduate Physics Student Services at (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 spectroscopy, nonlinear optics, condensed matter physics, and statistical mechanics. At the Lawrence Berkeley National Laboratory, extensive opportunities exist for research in astrophysics, elementary particle and nuclear physics, condensed matter physics and materials science, and plasma and nuclear physics. Space physics, interplanetary theory, plasma physics, solar plasma research, the upper atmosphere, and cosmological problems are pursued both in the Physics Department and at the Space Sciences Laboratory.

Course requirements for the Ph.D. include the following courses: Physics 155 (Electrostatics and Magnetism), Physics 211 (Equilibrium Statistical Physics) and Physics 221A-221B (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 postings for requirements. Physics 251, 290, 295, 298, 300, and 602 are excluded from the 19 units constrain. Of these 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. program may be fulfilled by grades 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 examination 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
Lower Division Courses

Courses 7A-7B-7C or H7A-H7B-H7C are fundamental and are designed to meet the needs of students who are 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 second-year mathematics sequence should take courses 53 and 1B as currently with Physics 7B-7C, respectively. Physics 8A-8B is designed for premedical students, students in architecture, and students in the biological sciences. Physics 10 is recommended for the non-science major who wishes to gain some understanding of basic physical concepts. These courses fulfill, in part, the natural science requirements of the College of Letters and Science. All students planning to take lower division courses, except Physics 10, should have completed trigonometry.

7A. Physics for Scientists and Engineers. (4) Three hours of lecture and four hours of laboratory/lecture per week. Prerequisites: High school physics; Math 1A or 1AS; Math 1B or 1BS (which may be taken concurrently). Mechanics and wave motion. (F,SP) Staff

H7A-H7C. Physics for Scientists and Engineers. (4;4;4) Three hours of lecture, one hour of discussion, and three hours of laboratory per week. Prerequisites: High school physics; Math 1A or 1AS; Math 1B or 1BS (may be taken concurrently); Math 53; Math 54. Honors sequence corresponding to 7A-7B-7C, but with a greater emphasis on theory as opposed to problem solving. Students who have had advanced Physics on the high school level and who are intending to declare a major in physics. Entrance into H7A is decided on the basis of performance on an examination given during the first week of class or the consent of the instructor, and into H7B-H7C on performance in previous courses in a standard sequence. (F,SP) Staff

7B. Physics for Scientists and Engineers. (4) Three hours of lecture and four hours of laboratory/lecture per week. Prerequisites: Math 1A-1B, Math 53. (may be taken concurrently). Heat, electricity, and magnetism. (F,SP) Staff

7C. Physics for Scientists and Engineers. (4) Three hours of lecture, one hour of discussion, and three hours of laboratory per week. Prerequisites: 7A-7B. Math 1A-1B, Math 53; Math 54 may be taken concurrently. Electromagnetic waves, physical optics, relativity, and quantum physics. (F,SP) Staff

8A. Introductory Physics. (4) Students with credit for 7A will not receive credit for 8A. Three hours of lecture and four hours of discussion/laboratory per week. Prerequisites: Mathematics 16A or equivalent or consent of instructor. Introduction to forces, kinetics, equilibria, fluids, waves, and heat. This course presents concepts and methodologies for understanding physical phenomena. It provides useful preparation for upper division study in biology and architecture. (F,SP) Staff

8B. Introductory Physics. (4) Students with credit for 7B or 7C will not receive credit for Physics 8B. Three hours of lecture and four hours of discussion/laboratory section per week. Prerequisites: 8A or equivalent. Introduction to electricity, magnetism, electromagnetic waves, optics, and modern physics. The course presents concepts and methodologies for understanding physical phenomena, and is particularly useful preparation for upper division study in biology and architecture. (F,SP) Staff

10. Descriptive Introduction to Physics. (3) Three hours of lecture and one hour of discussion per week. Prerequisites: Open to students with or without high school physics. The most interesting and important topics in physics, stressing conceptual understanding rather than math, with applications to current events. Topics covered may vary and may include energy and the environment, nuclear physics, the Theory of Relativity, lasers, explosions, earthquakes, superconductors, and quantum physics. (F,SP) Muller, Staff

C10. Descriptive Introduction to Physics. (3) Students will receive no credit for C10 after taking 10. Three hours of lecture and one hour of discussion per week. Prerequisites: Open to students with or without high school physics. The most interesting and important topics in physics, stressing conceptual understanding rather than math, with applications to current events. Topics covered may vary and may include energy and the environment, nuclear physics, the Theory of Relativity, lasers, explosions, earthquakes, superconductors, and quantum physics. Also listed as Letters and Science C70V. (F,SP) Muller, Staff

21. Physics of Music. (2) Two hours of lecture and one hour of discussion per week. Prerequisites: No previous courses in Physics are assumed, although Physics 10 is recommended. Physical principles encountered in the study of music. The applicable laws of mechanics, fundamentals of sound, harmonic content, principles of sound production in musical instruments, musical scales, and the physics of the actual instrument will be presented to the student. Topics covered may vary and include energy and conservation, radioactivity, nuclear physics, the Theory of Relativity, lasers, explosions, earthquakes, superconductors, and quantum physics. Also listed as Letters and Science C70V. (F,SP) Muller, 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 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 smaller-seminar setting. Berkeley Seminars are offered in all campus departments, and topics vary from department to department and semester to semester. (F,SP)

39. Lower Division Physics Seminar. (1.5) 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 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 smaller-seminar setting. Berkeley Seminars are offered in all campus departments, and topics vary from department to department and semester to semester. (F,SP)

49. Supplementary Work in Lower Division Physics. (1-3) Course may be repeated for credit as topic varies. One hour of seminar per week. 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

59. 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 unit for five weeks. Sections 1-2 to be graded on a pass/failed 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. (1-4) Course may be repeated for credit as topic varies. 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 pass/failed 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 Curricula section of this catalog. One to four hours of independent study per week. Must be taken on a pass/failed 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 combine instruction in inquiry-based science teaching methods and learning pedagogy with 10 weeks of 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, motion of a particle in one, two, and three dimensions, central force motion, moving coordinate systems, mechanics of continuous media, normal modes, Lagrange’s equations, rigid body dynamics, tensor analysis techniques. (F,SP) Staff

108. Laser Physics. (3) Three hours of lecture and one hour of discussion per week. Prerequisites: 110A-110B or 113A-113B. This course, a survey of recent developments in lasers and photonics, is intended to provide the student with some basic research tools needed for graduate school and for industry. Basic laser principles, e.g., semiconductor lasers and optical fibers, will be illustrated by examples, e.g., diode, titanium-sapphire, dye, and excimer lasers. Applications will also be discussed, e.g., to spectroscopy, to the laser cooling of atoms, and to optical fiber communications. (SP) Staff

110A-110B. Electromagnetics 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 media; relativity, Maxwell equations. 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; three units may be taken for credit. No more than 3 units may be completed 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 digital circuits. The class meets for two 4-hour afternoon 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 its applications to macroscopic systems, condensed states, phase transformations, quantum distributions, elementary kinetic theory of transport processes, fluctuation phenomena. (F,SP) Staff

124. Introductory Nuclear Physics. (3) Three hours of lecture and one hour of discussion per week. Prerequisites: 137A. Tools of nuclear physics, alpha, beta, and gamma decay, nuclear interactions and structure, brief introduction to particle physics. (F) Staff

129A-129B. Particle Physics. (4-4) Three hours of lecture and one hour of discussion per week. Prerequisites: 137A-137B. (137B may be taken concurrently).
Tools of particle and nuclear physics. Properties, classification and interaction of particles including the quark-gluon constituents of hadrons. High energy phenomenaanalyzed by quantum mechanical methods. 129A will survey the field; including some related topics in general relativity. 129B will develop quantitatively such topics as quantum number determination of resonances, hadron structure functions, introductory electro–weak theory with Dirac matrices, grand unified theories. (F, F-P) Staff

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. Matter will vary and may include topics from special and general relativity, atomic and nuclear physics, radiation, fundamental particles and their symmetries, superconductivity and superfluidity, solid state physics, astrophysics, and cosmology. (SP) Staff

136. Applied Quantum Mechanics, (4) Students will receive no credit for 136 after taking 137A or 137B. Three hours of lecture and one hour of discussion per week. Prerequisites: 7A-7B, Math 53 and Math 54, or equivalent. This one-semester course intended for undergraduate and graduate students who are not physics majors, covers aspects of quantum mechanics that are essential for an understanding of modern science and technology. Topics to be covered include the Schroedinger equation, potential barriers and wells, the hydrogen atom, spin and angular momentum, bosons and fermions, time-independent and time-dependent perturbation theory, and applications. (4) Staff

137A-137B. Quantum Mechanics, (4,4) Three hours of lecture and one hour of discussion per week. 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: 105, 110A or consent of instructor. Historical and experimental foundation of Einsteins special relativity; spatial and temporal measurements, particle dynamics, electrodynamics, Lorentz invariance. Introduction to 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. A thorough introductory course in modern solid state physics. Crystal symmetries; classification of solids; band theory; electromagnetic, elastic, and particle waves in periodic lattices; thermal magnetic and dielectric properties of solids; energy bands of metals and semiconductors; 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. Variance of plasma parameters from both microscopic and macroscopic point of view, magnetohydrodynamics, small amplitude waves; examples from astrophysics, space sciences and controlled-fusion research. (SP) Staff

141. Relativistic Astrophysics and Cosmology, (4) Four hours of lecture and one hour of discussion per week. Prerequisites: 110A-110B, 112 (may be taken concurrently). Formerly C160B and Astronomy C165. Elements of relativistic astrophysics. Einstein’s theory of relativity, gravitational waves, pulsars, cosmic rays, black holes. The cosmological dis- tance scale, elementary cosmological models, prop- erties of galaxies and quasars. The mass density and age of the universe. Dark matter and the ex- cels of the early universe and of galaxy formation. Reflections on astrophysics as a probe of the extrema of the physics. Also listed as Astronomy C161. (SP) Arons, Boggs, Davis, Holzapfel, A. Lee, Ma, Quataert

177. Principles of Molecular Biophysics, (3) Three hours of lecture and 1 hour of discussion per week. Prerequisites: 112 or consent of instructor. We will re- view the structure of proteins, nucleic acids, carbo- hydrates, lipids, and the forces and interactions main- taining their structure in solution. We will describe their motions and interactions with other macromolecules. In the second part of this course we will study the thermodynamics and kinetics of protein folding. The principles of polymer chain statistics and of helix-coil transitions in biopolymers will be reviewed next, to- gether with biomolecular dynamics. We will then cover the main structural methods in biology: X-ray crystallography, MRI and fluorescence spectroscopy, electro- and probe microscopy, and single molecular meth- ods. (SP) Bustamante

H190. Physics Honors Course, (2) Course may be repeated for credit. Must be taken on a passed/not passed basis. A seminar which includes study and re- ports on current theoretical and experimental prob- lems. Open to all students. (F) Staff

C191. Quantum Information Science and Technology, (3) Three hours of lecture and one hour of 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 the conceptual aspects of quantum mechanics from a computational and infor- mational theoretic perspective, as well as physical im- plementations and technological applications of quan- tum information. Sections of the course cover: quantum algorithms, complexity, and cryptography, will be touched upon, as well as pertinent physical realizations from nanoscale science and engineering. Also listed as Chemistry C191 and Computer Science C191. (FSP) Staff

Clarke

H195A-H195B. Senior Honors Thesis Research, (2,2) Credit and grade to be awarded on completion of sequence. Prerequisites: Open only to students in the honors program who have completed a thesis under the supervision of a faculty member. To obtain the credit the student must, at the end of two semesters, submit a satisfactory thesis. A total of four units must be taken. The units may be distributed between one or two semesters in any way. (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. Enrollment restrictions apply; see the In- troduction to Courses and Curricula section in this cat-alog. (F,SP) Staff

199. Supervised Independent Study, (1-3) Must be taken on a passed/not passed basis. Enrollment re- strictions apply; see the Introduction to Courses and Curricula section in this catalog. (F,SP) Staff

Graduate Courses

205A. Advanced Dynamics, (4) Three hours of lec- ture and one hour of discussion per week. Prerequi- sites: 105 or equivalent. Lagrange and Hamiltonian dy- namics, variational methods, symmetry, kinematics and dynamics of rotation, canonical variables and transformations, perturbation theory, non-linear dy- namics, KAM theory. (F) Staff

205B. Advanced Dynamics, (4) Three hours of lec- ture and one hour of discussion per week. Prerequi- sites: 205A. Continuous systems, dissipative systems. Attractors. Emphasis on recent developments, in- cluding 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. 208, 221A, or their equivalents are recommended. Semiclassical theories of emission and absorption, theory and operation of common laser sys- tems, wave propagation in anisotropic and nonlinear dielectric media, applications of 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 ab- sorption and high resolution spectroscopies, multi- photon processes. (SP) Staff


211. Equilibrium Statistical Physics, (4) Three hours of lecture and one hour of discussion per week. Prerequi- sites: 112 or equivalent. Foundations of statistical physics. Elements of quantum systems. Sys- tems of interacting particles. (F) Staff

212. Nonequilibrium Statistical Physics, (4) Three hours of lecture and one hour of discussion per week. Prerequisites: 112 and 221A-221B, or equivalents. Time dependent processes, Kinetic equations. Trans- port processes, irreversible. 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 recom- mended. Quantum Cohesion in simple systems. Applications of theory and technique to physical sys- tems. Pairing phenomena, superfluidity, equation of state, critical phenomena, phase transitions, nuclear matter. (SP)

221A. Quantum Mechanics, (5) Three hours of lec- ture and one hour of discussion per week. Prerequi- sites: 137A-137B or equivalent. Basic assumptions of quantum mechanics; quantum theory of measurement; matrix mechanics; Schroedinger theory; symmetry and invariance principles; time–independent and variational; stationary state problems; variational principles; time independent perturbation theory; time dependent perturbation theory; theory of scattering. (F)

221B. Quantum Mechanics, (5) Three hours of lec- ture and one hour of discussion per week. Prerequi- sites: 221A. Many–body methods, radiation field quan- tization, relativistic quantum mechanics, applications. (SP) Staff

222. Special Topics in Mathematical Physics, (2-4) Course may be repeated for credit with consent of in- structor. Three hours of lecture and one hour of dis- cussion per week. Prerequisites: Consent of instructor. Application of a branch of mathematics to physical problems. Topics to be announced by the department. (SP) 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. Introduction to particle physics phenomena. Emphasis is placed on experimental tests of particle physics models. Topics include: Quark model spectroscopy; weak decays; overview of detectors and data analysis; the standard model; electroweak and QCD scattering; special topics of current interest. (F) Staff

C228. Extragalactic Astronomy and Cosmology. (3) Three hours of lecture per week. A survey of physical cosmology including structure in the universe, inflation in the early universe, big bang nucleosynthesis, the dynamics and formation of galaxies and large scale structure, the anisotropy of the cosmic microwave radiation, galaxy evolution, tests of cosmological models and current problem areas. The course complements the material of Astronomy C228. Also listed as Astronomy C228. (F) Davis, Holzapfel, Lee, Ma, White

229A. Standard Model of Particle Physics I. (4) Three hours of lecture and one hour of discussion per week. Prerequisites: 221A-221B or equivalent or consent of instructor; 226 (concurrent enrollment is recommended); 229A or equivalent or consent of instructor. Introduction to standard model and its applications: Higgs mechanism, construction of standard model, parity breaking, interactions, chiral Lagrangian; QCD and scaling violation. (F-S-P) Staff

229B. Standard Model of Particle Physics II. (4) Three hours of lecture and one hour of discussion per week. Prerequisites: 229A or equivalent or consent of instructor. Advanced topics in standard model, beyond: open problems in standard model, advanced topics in standard model, physics beyond standard model, cosmology and particle astrophysics. (F-S-P) Staff

230A. Quantum Field Theory I. (4) Three hours of lecture and one hour of discussion per week. Prerequisites: 229A or equivalent or consent of instructor. Functional integral method; renormalization and renormalization group analysis, non-anabelian gauge theory. (SP) Staff

230B. Quantum Field Theory II. (4) Course may be repeated for credit with consent of instructor. Three hours of lecture and one hour of discussion per week. Prerequisites: 229B, 230A or equivalent or consent of instructor. Topics selected from: perturbative methods such as instantons, solitons, the large-N expansion, and expanding expansions; modern mathematical methods and exact results; solvable models of quantum field theory; supersymmetry, supergravity, and superstring. (F) Staff

231. General Relativity. (4) Three hours of lecture and one hour of discussion per week. Prerequisites: 209 or equivalent, or consent of instructor. An introduction to Einstein’s theory of gravitation. Tensor analysis, general relativistic models for matter and electromagnetism, Einstein’s field equations. Applications, for example: black holes, wormholes, density waves, dark holes, and cosmology. (SP) Staff

240A-240B. Quantum Theory of Solids. (4,4) Three hours of lecture and one hour of discussion per week. Prerequisites: 141A-141B and 221A-221B or equivalents; or consent of instructor; 240A is prerequisite to 240B. Excitations and interactions in solids; crystal structure, symmetry, Bloch’s theorem; energy bands; electronic density of states; lattice dynamics; phonons; many-electron interactions; density functional theory; dielectric functions, conductivity and optical properties; electron-phonon interactions, polaron; Fermi surfaces; magnetoresistance; quantum Hall effect; transport processes, Boltzmann equation; superconductivity, BCS theory; many-body perturbation theory, Green’s functions. (F) Staff

242A-242B. Theoretical Plasma Physics. (4,4) Three hours of lecture and one hour of discussion per week. Prerequisites: 142. Analysis of plasma behavior according to the Vlasov, Fokker-Planck equations, guiding center and hybrid formulations. Study of equilibria, stability, linear and nonlinear electromagnetic waves, transport, and interaction with radiation. Rigorous kinetic theory. (F) Staff

250. Special Topics in Physics. (2-4) Course may be repeated for credit with consent of instructor. Prerequisites: Consent of instructor. Topics to be announced. See Department of Physics announcements. (F-S-P) Staff

251. Introduction to Graduate Research in Physics. (1) One hour of lecture per week. Must be taken on a satisfactory/unsatisfactory basis. Prerequisites: Graduation standing. For graduate students who desire to pursue independent research in the Department. (F-S-P) Staff

C254. High Energy Astrophysics. (3) Three hours of lecture per week. Prerequisites: 201 or consent of instructor. Basic concepts of high energy radiation processes in astrophysics environment. Cosmic ray production and propagation. Applications selected from pulsars, x-ray sources, supernovae, intermediate state, extragalactic sources, quasars, and black hole cosmologies. Also listed as Astronomy C254. (F) Arons, Boggs, Lin, Quataert

228. 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 C228. (F-S-P) Staff

290A-290Z. Seminar. (2) Course may be repeated for credit. Two hours of seminar per week. Must be taken on a satisfactory/unsatisfactory basis. (F-S-P) Staff

290C. Cosmology. (2) Course may be repeated for credit. Two hours of seminar per week. Must be taken on a satisfactory/unsatisfactory basis. Formerly Physics 290C. Astronomy 290C. (F-S-P) 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-S-P) Staff

299. Research. (1-12) Course may be repeated for credit with consent of instructor. Three hours of research per week. Must be taken on a satisfactory/unsatisfactory basis. (F-S-P) Staff

290. 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-S-P) Staff

295. Special Study for Graduate Students. (1-4) Must be taken on a satisfactory/unsatisfactory basis. Prerequisites: Graduate standing. This course is arranged to allow graduate students to investigate possible research fields or to pursue problems of interest through reading or non-laboratory study under the direction of faculty members who agree to give such supervision. (F-S-P) Staff

299. Research. (1-12) Must be taken on a satisfactory/unsatisfactory basis. Prerequisites: Graduate standing. (F-S-P) 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-S-P) 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 consent of instructor. Discussion, problem review and development, guidance of physics laboratory experiments, course development, supervised practice teaching. (F-S-P) Staff

Plant and Microbial Biology (College of Natural Resources)

Department Office: 111 Koshland Hall, (510) 642-9999
Student Affairs Office: 111C Koshland Hall, (510) 642-5167
http://cnr.berkeley.edu/site/index.php
Chair: Brian Staskawicz, Ph.D.
Division Chair: Plant Biology; Brian Staskawicz, Ph.D.
Division Chair, Microbial Biology: John Taylor, Ph.D.

Professors

Thomas D. Bruce, Ph.D. University of Michigan. Fungal molecular evolution
Bob Buchanan, Ph.D. Duke University. Plant microbial plant physiology
W. Zachues Cande, Ph.D. Stanford University. Cell and developmental biology
Lewis J. Feldman, Ph.D. Harvard University. Plant physiology/development
Robert Fitchie, Ph.D. University of California, Berkeley. Plant molecular biology
Michael Feeley, Ph.D. University of Indiana. Plant development and gene regulation
Andrew O. Jackson, Ph.D. University of Manitoba, Canada. Plant genetics
Russell J. Jones, Ph.D. University of Wales. Plant physiology
Sydney Kustu, Ph.D. University of California, Davis. Plant cell physiology
Steven E. Lindow, Ph.D. University of Wisconsin. Bacterial ecology, physiology and epidemiology
Sheng Luan, Ph.D. Harvard University. Plant cell biology
Paul Ludden, Ph.D. University of Wisconsin, Madison. Microbial biochemistry
Richard Mallkin, Ph.D. University of California, Berkeley. Biosenergetics of photosynthesis
Anastassia Melis, Ph.D. Florida State University. Plant molecular responses to the environment
Peter M. Quail, Ph.D. University of Sydney. Plant molecular biology
Brian J. Staskawicz, Ph.D. University of California, Berkeley. Molecular genetics
Zimay Renee Sung, Ph.D. University of California, Berkeley. Plant somatic cell genetics
John W. Taylor, Ph.D. University of California, Davis. Plant physiology
Norman Terry, Ph.D. University of Nottingham. Environmental plant physiology
Loy Volkman, Ph.D. University of Washington. Insect virology
Patricia L. Zambryski, Ph.D. University of Colorado. Plant molecular biology
Donal Kaplan (Emeritus), Ph.D. University of California, Berkeley. Developmental morphology of vascular plants
Watson M. Laetsch (Emeritus), Ph.D. Stanford University. Exponential morphology
Rodger B. Park (Emeritus), Ph.D. California Institute of Technology. Plant molecular biology
John A. West (Emeritus), Ph.D. University of Washington. Phycology

Associate Professors

Steven E. Brenner, Ph.D. University of Cambridge, Cambridge, UK. Computational structural and functional genomics
John Coates, Ph.D. University College Galway. Geomicrobiology, bacterial diversity, industrial microbiology, bioremediation
N. Louise Glass, Ph.D. University of California, Davis. Viral genetics
Krishna K. Niyogi, Ph.D. Massachusetts Institute of Technology. Plant molecular biology

Assistant Professors

Arash Kornell, Ph.D. University of California, San Francisco
Kathleen Ryan, Ph.D. John Hopkins University School of Medicine. Regulation of the Lactobacillus cell cycle and cell polarity
Mary Wiemuth, Ph.D. University of Colorado, Boulder. Biosynthesis regulation and function of small molecules that mediate host-pathogen interactions

Adjunct Professors

Sarah C. Hake, Ph.D. Washington University. Plant developmental genetics
Peggy A. Smith, Ph.D. University of Michigan. Sheilah M. McCormick, Ph.D. University of Missouri. Plant molecular biology

Adjunct Associate Professors

Barbara Baker, Ph.D. Washington University. Plant genetics and disease resistance
David Ow, Ph.D. Harvard University. Plant and viral gene expression
The Department of Plant and Microbial 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 Kellogg 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.

Graduate 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, synthesize essential nutrients and chemicals directly to multicellular organisms, and they engage in numerous beneficial symbioses with higher organisms. By the same token, infectious diseases regulate populations of plants and animals, and outbreaks recur in human societies on a global scale. Microorganisms are the evolutionary precursors of chloroplasts and mitochondria, the energy-producing centers of plants and animals, so even the study of evolutionary microbiology is not complete without an understanding of microbiology.

Furthermore, the full diversity of the microbial world is poorly known: unique microbial communities and biochemical processes remain to be discovered. The renewed appreciation of the relevance of microbes to all life means that there is an increasing demand for government and industry for employees with knowledge and skills related to microbial 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 interested in biology in general, and for students interested in pursuing postgraduate education in biology.

Graduate Program in Plant Biology

The program in plant biology is designed to train students in modern research areas of plant biology. Students’ courses of study are designed individually to align with 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 department has research expertise in the following areas: molecular, cellular, genetic, biochemical, physiological, developmental, and structural biology, and plant-microbe interactions. The core course emphasizes in an integrated manner the following areas: plant structure, plant physiology, plant biochemistry, plant cell biology, and plant molecular biology.

Prospective students for the graduate program in plant biology are expected to demonstrate academic excellence and potential for independent scientific research as shown by grades in university-level undergraduate and graduate courses, letters of recommendation, written statements of academic and professional goals, and other evidence of academic accomplishment. Scores on standardized tests, such as the Graduate Record Examination, will be required of all applicants. Students seeking detailed information about matters such as admission, curriculum, and courses of financial support should contact the student affairs assistant or the graduate adviser.

Graduate Program in Microbial Biology

The Department of Plant and Microbial Biology administers the Graduate Group in Microbiology which awards the Ph.D. degree in Microbiology at UC Berkeley. A Graduate Group is an interdisciplinary group of faculty who offer a program in a specific area. Enrollment limits for the 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, addresses the following areas: 1) Biochemistry 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 under “Microbiology” in the General Catalog.
principles and mechanisms, evolution, philosophical implications and relation of genetics to global problems of human and environmental health. Also listed as Molecular and Cell Biology C41X. (SP) Freeling

84. Sophomore Seminar. (1,2) Course may be repeated for credit as topic varies. One hour of seminar per week per unit for up to two terms. Must be taken on a pass/no pass basis. Sections 3-4 to 2 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. (F,SP)

C96. Studying the Biological Sciences. (1) 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 general information that they can use in their major course, and as future science professionals. Restricted to freshmen in 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 general information that they can use in their major course, and as future science professionals. Limited to 22 freshmen. (F)

99. Supervised Independent Study and Research. (1-3) Course may be repeated for credit. Individual meetings. Must be taken on a passed/not passed basis. Prerequisites: GPA of 3.4 or higher; lower division status. 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

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 treatment 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 the Diversity of Plants and Fungi. (2) Four hours of laboratory per week and two 1-day field trips. Prerequisites: Biology 1A-1B. Must be taken concurrently with C102. Laboratory for C102. Also listed as Integrative Biology C101L. (F) Staff

C103. Bacterial Pathogenesis. (3) Three hours of lecture per week. Prerequisites: Molecular and Cell Biology 100, 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 mammals, 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, immune response to infection, and the cell biology of host-parasite interactions. Also listed as Public Health C102 and Molecular and Cell Biology C103. (SP) Portnoy

C107. Principles of Plant Morphology. (2) Two hours of lecture per week. Prerequisites: Biology 1A-1B; must be taken concurrently with 107L. Formerly 101L. Laboratory designed to accompany C107, Principles of Plant Morphology. (F) Kaplan

110. Biology of Fungi. (2) Two hours of lecture per week. Prerequisites: Biology 1A-1B; Integrative Biology 101 recommended. Must be taken concurrently with 110L. Selected aspects of fungi: their structure, reproduction, physiology, ecology and genetics, their role in plant disease, human disease, and industrial use. (F) 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 110. Laboratory designed to accompany C110, Principles of Fungi. Lab trips are occasionally 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 Cell Biology 100 or 102. Formerly 112. This course will explore the molecular bases for 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 structure-function analyses of microbial cell cycles, adaptive responses, metabolic 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 and 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 lecture in C112 and C114. The primary emphasis in the laboratory will be on the cultivation and physiological and genetic characterization of bacteria. Lab exercises will include the isolation, enrichment, and isolation of bacteria from selected environments. Also listed as Molecular and Cell Biology C112L. (F) Kustu

113. California Mushrooms. (2) Three hours of lecture 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 laboratory work with fresh and dried fungi. Short lectures at the beginning of labs focus on mushroom family collections and identification. Three weekend field trips are required in addition to the weekly laboratory. Previous course experience with fungi is recommended, but not required. Grades are based on tests and a collection. Offered alternate odd years. (F) Bruno

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 examined with respect to their biochemical, structural and morphological properties, and strategies of infection and replication. Also listed as Environ Sci, Policy, and Management C138 and Molecular and Cell Biology C114. (SP) Volkman, Jackson

C116. Microbial Diversity. (3) Three hours of lecture per week. Prerequisites: Formerly 116L. Formerly 116. This course for upper division and graduate students will broadly survey myriad types of microbial organisms, both prokaryote and eukaryote, using an organismal approach to organize the concept of “biodiversity.” Emphasis will be on the evolutionary development of the many biochemical themes, how they mold our biosphere, and how they influence evolution. Many of 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 will attend regularly in co-curriculum. (SP) Staff

C117. Laboratory for Principles of Plant Morphology. (2) Six hours of laboratory per week. Prerequisites: Biology 1A-1B; must be taken concurrently with 107L. Formerly 101L. Laboratory designed to accompany C117, Principles of Plant Morphology. (F) Kaplan

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. General biology of freshwater and marine algae, including phytoplankton, photosynthesis, and integration of phylogeny, ecology, physiology, genetics, and molecular biology. (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. The laboratory will integrate laboratory and field research. Lab sections include study of representative taxa, identification of specimens collected during several field trips, and experiments on development, physiology, and molecular genetics. (SP) Nyogi

C134. Chromosomal Biology/Genetics. (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, transposons, repetitive DNA, and modern cytogenetic methods. Also listed as Molecular and Cell Biology C134. (SP) Cande, 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 of higher plants, including water relations, ion transport, and hormone physiology; photosynthesis (light utilization and carbon assimilation), nitrogen and sulfur metabolism, and plant-specific biosynthetic pathways. (F) Melis, Terry

135L. Laboratory for Physiology and Biochemistry of Plants. (3) Three hours of laboratory per week. Prerequisites: Biology 1A-1B; must be taken concurrently with 135. Laboratory designed to accompany 135, Physiology and Biochemistry of Plants. (F) Melis

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; or consent of instructor. Instruction and discussion of topics in genomics and computational biology. Working from evolutionary concepts, the course will cover principles and applications of genomic analysis, including genome sequencing and functional annotation, and phylogenetic analysis. Also listed as Bioengineering C146 and Molecular and Cell Biology C146. (SP) Eisen

C148. Microbial Genomics and Genetics. (3) Three hours of lecture per week. Prerequisites: Molecular and Cell Biology 100 or 102, Formerly Plant and Microbial Biology 118. Course emphasizes bacterial and archeal genetics and comparative genomics. Genetics and genomic methods used to dissect metabolic and developmental processes in bacteria, archaea, and selected microbial eukaryotes. Genetic mechanisms integrated with genomic information to address integration and diversity of microbial processes. Introduction to the use of computational tools for a comparative analysis of microbial genomes and demonstration of current research and theory in microbial genome sequencing and functional annotation, and phylogenetic analysis. Also listed as Bioengineering C148 and 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: organelles, development, and intracellular trafficking of small and macromolecules; cellular signaling; cell division and specialization. (F) Hake, Luan

150L. Laboratory for Plant Cell Biology. (1) Three hours of laboratory/discussion per week. Prerequisites: Biology 1A-1B. Must be taken concurrently with 150. Designed to accompany the lecture course and to in-
160. Laboratory for Plant Molecular Genetics. (1-3) Three hours of lecture/discussion per week. Prerequisites: Biology 1A-1B. Must be taken concurrently with 160. Laboratory designed to accompany 160, Plant Molecular Genetics. Basic concepts of modern agriculture will be reviewed in light of emerging biotechnology applications. Emphasis will be placed on understanding the tools and techniques 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. Instructors will cover the physiological and molecular 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) Meigs, Terry

H196. Honors Research. (1-4) Course may be repeated for credit. Prerequisites: Enrollment in department honors program. Overall GPA of 3.20 or better; consent 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. Must be taken on a pass/not passed basis. Prerequisites: Consent of instructor. Group studies of selected topics. (F,SP) Staff

199. Supervised Independent Study and Research. (1-3) Course may be repeated for credit. Must be taken on a pass/not passed basis. Prerequisites: Consent of instructor; overall GPA of 3.0. Enrollment restrictions apply: see the Introduction to Courses and Curricula section of this catalog. (F,SP) Staff

Graduate Courses

200A. Plant and Microbial Genetics. (4) Two hours of lecture and two hours of discussion per week. Prerequisites: Consent of instructor. Core course for first year graduate students. A consideration of mutant induction and characterization, chromosome/DNA mechanics, transposition biology, and aspect of gene regulation in developmental mutants. Class format involves lectures and discussion of readings of historical and contemporary papers. (F) Freeing, Hollick, Nyogi

200B. Plant Biochemistry. (2) One hour of lecture and two hours of discussion 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) Buchanan, Melis

200C. Molecular Genetics of Plant Development. (2) One hour of lecture and two hours of discussion 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) Fletcher, Sung, Theologis

200D. Plant Cell Biology. (2) One hour of lecture and two hours of discussion per week. Prerequisites: Consent of instructor. Core course for first year graduate students. A consideration of the particular characteristics of plant cells, with a focus on intracellular signal transduction pathways. Class format involves lectures and discussion of readings of historical and contemporary papers. (SP) Luan, Zambryski

201. Faculty Research Review. (2) Three hours of lecture per week. Must be taken on a satisfactory/unsatisfactory basis. Prerequisites: Consent of instructor. Prerequisites: Consent of instructor. Presentation and discussion of faculty research in the area of molecular biology. Faculty members review recent advances in their area of expertise and present an outline 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

202. Faculty Research Review. (1) One hour of lecture per week. Must be taken on a satisfactory/unsatisfactory basis. Prerequisites: Consent of instructor. Presentations and discussions of faculty research in the area of molecular biology. Faculty members review recent advances in their area of expertise and present an outline of current research activities in their laboratoires. 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 analyze the logic and reasoning of well-reasoned papers and the logic and reasoning of 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

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 phylogenetic and population genetics), physiology, microbiology, genetics and development, host parasite interactions, and ecology will be provided. Emphasizing how to design experiments that will provide a broad perspective of microbiology will be discussed. 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

239. Topics in Computational Biology and Genomics. (3) 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 discussions of current research in bioinformatics, biocomputing, and computational biology. Working from conceptual evolution, the course will cover principles and application of molecular sequence comparison, genome sequencing and functional annotation, and phylogenetic analysis. Also listed as Bioengineering 2246 and Molecular and Cell Biology 2246. (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 grant proposals. Some of the scheduled classes will include discussion of 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 section. 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. Prerequisite: Admission to 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 GSI’s 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

300. Workshop on Teaching. (2) Course may be repeated for a maximum of 4 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 GSI’s 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. (2) 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 and/or creating publication-quality figures. Topics include image acquisition (including cameras), beginning image processing and analysis, and digital image enhancements. 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

*Professor of the Graduate School
*Recipient of Distinguished Teaching Award
Students are reminded that: (1) no course work 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.

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 course work 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 for the group major are not included in this restriction.

Honors Program. To graduate with honors from the group major in PEIS, students must enroll in the two-semester honors seminar, IAS 102 or IAS 118 and PEIS H195, and must obtain grade-point averages of 3.5 in the major and in overall university course work. The honors seminar is taken in addition to a student’s regular course work 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 instructor. Eligibility for participating in the Honors Program may be checked in the Teaching Program Office.

Course Plan

There is considerable flexibility within the PEIS major. It permits and encourages students to construct programs appropriate to their intellectual interests and the global areas they wish to stress in their studies. There are, however, minimal core course requirements that each student must meet. These requirements are designed to provide all PEIS students with a common background of knowledge and common intellectual reference points.

The program consists of three tiers of course work and a foreign language requirement: (1) four lower division courses provide necessary historical, political, quantitative, linguistic, and economic skills essential for upper division course work and for future career and educational options; (2) six upper division core courses provide detailed background for studying modern political 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 single 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 course work: This could consist of any combination of high school, college, summer program, or college-level study abroad program. At a minimum, students must complete 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 letter grade. Language courses may 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 requirement. Students must be enrolled in a course that fulfills the requirement and may use AP credit, if applicable, to attain this requirement. See an adviser in the IAS office concerning language study abroad.

(2) With a proficiency examination: Students whose language skills are at a fourth semester or beyond capability and who do not wish to take language courses can opt to test out of the requirement. However, not all of Berkeley’s language departments offer proficiency exams. Ask an adviser in the IAS Office about specific departmental policies.

(3) Being a non-native English speaker: Non-native speakers of English may use their native language to satisfy this requirement. You must demonstrate a proficiency level equivalent to four college-level semesters through proficiency testing (see paragraph above). Alternatively, students who can document that they were educated in their native countries in their native language at least through high school, or the equivalent of high school, will be exempted from the requirement.

Lower Division

There are four required courses at the lower division level. Lower division requirements may be satisfied by (1) successfully completing the appropriate course or its equivalent, (2) providing evidence of AP credit, or (3) with prior consent from a faculty adviser, satisfactorily completing an upper division equivalent. Please consult with the Teaching Program Office for current information.

Required Courses.

Economics 1 or 2; IAS 45; Political 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; two courses in an introductory sequence: historical context; one course in introductory sequence: political economy; and four courses focusing on a student’s concentration in the major.

Note: In fulfilling the upper division major requirements, 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 pass/No pass basis.

I. Conceptual Tools

Section A: two courses in intermediate economics. Choose one of the following sequences: Economics 100A-100B or Economics 101A-101B or IAS 107/108 A instructor Office for current information.

Section B: one course in modern theory and methodology: PEIS 101.

II. Introductory Sequence: Historical Context

Section A: one course in classical works: PEIS 100.

Section B: one course in the rise of the industrial state: Economics 115; History 159B, 160, 161.

III. Introductory Sequence: Political Economy

One course: Business Administration 107; City and Regional Planning 112A; Economics 161; Political Science 120A, 121A, 121B, 126A, 126B, 138B, 138E.

IV. 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 their 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 understanding of your concentration topic. Second, all the courses listed in the PEIS handbook have been evaluated and chosen for their appropriateness for your concentration topic. However, you may also choose courses not listed in the handbook with adviser approval. Third, no courses taken for your concentration will be double-counted toward another requirement. Your concentration adviser and courses need to be approved when you are admitted to the major and also must be re-approved should you wish to change your statement or any of your course choices.

Both defining your concentration topic and deciding on the relevant course work must be done in conjunction with a PEIS faculty or staff adviser. The concentration 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 Teaching Program Office. Although every attempt is made to publish an accurate list of acceptable course work, the lists may not be entirely comprehensive.

Recommended Courses

Listed below are a few of the many course options which PEIS majors have found particularly relevant and helpful in providing a basic introduction for methodology and other upper division courses:

History 7B, Mathematics 1A-1B, *Demography 100.*

*MATH 16A-16B or the self-paced equivalents to either sequence are acceptable alternatives. However, it is strongly recommended that Math 1A-1B be taken on a pass/no pass basis. If a self-paced version is chosen, students are reminded to schedule their units conservatively and clearly understand how self-paced scheduling works.

Minor in European Studies

The minor in European studies is open to all undergraduates except PEIS majors. Applications for the minor and a list of appropriate courses are available from the Teaching Program Office.

Requirements: Students must complete six upper division courses, including PEIS 100 and 101. The remaining four courses must be concentrated in two of three specified fields: politics, business/economics, 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; (2) all courses satisfying minor requirements must be taken for a letter grade; and (3) a minimum GPA of 2.0 must be achieved in all course work used to satisfy the minor requirement.

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 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 of one hour per unit per week. One-semester lecture course offered each semester. In-depth analysis of the classical political economy literature, including such authors as Locke, Smith, Marx, Mills, and Weber to Veblen and Polanyi. Strong emphasis is placed on providing appropriate background for understanding the evolution of the literature that has emanated from the various social sciences disciplines and forms the basis of modern political economy. (F,SP)

100. Classical Theories of Political Economy. (4) Three hours of seminar per week per unit for five weeks. Sections 1-2 to be graded on a passed/not passed basis. One-semester lecture course offered each semester. In-depth analysis of the classical political economy literature, including such authors as Locke, Smith, Marx, Mills, and Weber to Veblen and Polanyi. Strong emphasis is placed on providing appropriate background for understanding the evolution of the literature that has emanated from the various social sciences disciplines and forms the basis of modern political economy. (F,SP)

101. Contemporary Theories of Political Economy. (4) Three hours of lecture and one hour of discussion per week. This course is designed to introduce students to modern theoretical works of central intellectual debates on 20th century international political economy. The course explores alternative explanations for inequality in economic development among nations and economic decline of the dominant powers. It will also examine increasing interdependence and the "globalization" of that economy and continued fragmentation of the international political system in nation-states. (F,SP)

130. Cross-Listed Topics. (1-4) Course may be repeated for credit. Three hours of seminar per week per unit for five weeks. 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 seminar per week per unit 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 and knowledge in a particular field of political economy or industrial societies. Topics will vary from semester to semester. (F,SP)

150. Advanced Study in Political Economy of Industrial Societies. (4) Course may be repeated for credit. Three hours of seminar per week. Prerequisites: Upper division standing; consent of supervisor. This course is designed to provide a vehicle for undergraduate students interested in writing a major paper on a political economy topic. The paper should be approximately thirty pages in length; the topic should be agreed upon in advance by both the student and faculty sponsor. (F,SP)

192. Senior Thesis. (3) Individual weekly meetings. Prerequisites: Upper Division standing; consent of supervisor. This course is designed to provide a vehicle for undergraduate students interested in writing a major paper on a political economy topic. The paper should be approximately thirty pages in length; the topic should be agreed upon in advance by both the student and faculty sponsor. (F,SP)

195. Senior Honors Thesis Seminar. (4) Two hours of seminar plus one hour of consultation per week. Prerequisites: International and Area Studies 102 and consent of supervisor. Formerly H195A-H195B. Honors students are required to read and write a thesis based on the prospectus developed in International and Area Studies 102. The thesis is a complete research project. The honors instructor and a second reader to be selected based on the thesis topic. Weekly progress reports required. (F,SP) Staff

196. Special Field Research. (1-6) Course may be repeated for a maximum of 12 units. 240-300 hours work per semester plus regular meetings with the faculty supervisor. Prerequisites: Consent of instructor. Students to 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. The 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 faculty adviser. (F,SP)

C196W. Special Field Research. (1-6) Course may be repeated for a maximum of 12 units. 240-300 hours work per semester plus regular meetings with the faculty supervisor. Prerequisites: Consent of instructor. Formerly 196W. Students to work in selected intern- ship programs approved in advance by the faculty co-ordinator and for which written contracts have been es- tablished between the sponsoring organization and the student. Students will be expected to produce two two reports for their faculty adviser during the course of the internship, as well as produce a final pa- per for the course consisting of no fewer than 35 pages. Other restrictions apply; see faculty adviser. (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 division standing and consent of instructor. Supervised experience relevant to specific aspects of Political Economy of Industrial Societies. Topics will vary from semester to semester. (F,SP)

198. Directed Group Study. (1-4) Course may be repeated for credit. Group meetings to be announced. Must be taken on a passed/not passed basis. Prerequisites: Upper division standing and consent of instructor. (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: Upper division standing and consent of instructor. Written proposal must be approved by a faculty adviser. Enrollment restricted by regulations of the college. (F,SP)

Political Science

Department Office: 210 Barrows Hall, (510) 642-6323 http://www.polisci.berkeley.edu Chair: Pradeep Chhibber, Ph.D.

Professors

Vinod K. Aggarwala, Ph.D. Stanford University. International political economy, development.

Henry E. Brady, Ph.D. Massachusetts Institute of Technology. Quantitative methodology, American and Canadian political parties, international organizations.


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.

Jacob Citrin, Ph.D. University of California, Berkeley. Political behavior, comparative government.

David Cottler, Ph.D. University of Chicago. Comparative politics, Latin America, methodology.


Lowell Dittmer, Ph.D. University of Chicago, China

Vinod K. Aggarwala, Ph.D. University of California, Economic history

A. James Gregor, Ph.D. Columbia University. Methodology, globalization, race and ethnicity.

Ruth B. Collier, Ph.D. University of Chicago. Comparative politics, Latin American politics.

G. Donald Palma, Ph.D. University of California, Berkeley. Comparative politics, Western Europe.

Todd R. La Porte, Ph.D. Stanford University. Public organization and administration; science, technology and public affairs.

Hong Yung Lee, Ph.D. University of Chicago, Korea, East Asian international relations, political economy

Kevin O’Brien, Ph.D. Yale University. Comparative politics, Chinese, social movements

T. J. Pempel, Ph.D. Columbia University. Comparative politics, political economy, contemporary Japan and Asian regions.

*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
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

Nelson W. Polsby, Ph.D. Yale University. American politics

Robert L. Powell, Ph.D. University of California, Berkeley. Formal theory and methodology

Robert M. Price, Ph.D. University of California, Berkeley. Comparative politics, African politics

Gergard Roland, Ph.D. Université Libre de Bruxelles (ULB). Transition, political, and institutional economics

Eric Schickler, Ph.D. University of California, Berkeley. American politics

J. Merrill Shanks, Ph.D. University of Michigan. Research methodology, sectoral behavior, public opinion

Shannon C. Simon, Ph.D. Harvard University. Political theory, philosophy, and history of ideas

Philip E. Tetlock, Ph.D. Yale University. Political psychology, political knowledge and accountability in decision making

D. Paul Thomas, Ph.D. Harvard University. Political theory, Marxist theory

David J. Vogel, Ph.D. Princeton University. Governmental regulation and economic international, environmental issues

Steven Weber, Ph.D. Stanford University. International relations, U.S.-Soviet relations, national security

Margaret M. Weir, Ph.D. University of Chicago. Historical and political sociology, employment, race, poverty, urban issues

Raymond E. Wolfinger, Ph.D. Yale University. American politics, voting behavior, Congress

John Zysman, Ph.D. Massachusetts Institute of Technology. Comparative politics, Western European politics

Jyotindra Datta, Ph.D. University of California, Berkeley. Comparative politics, development politics, political theory

Norman Jacobson (Emeritus), Ph.D. University of Wisconsin. American and European political theory

Andrew C. Janos (Emeritus), Ph.D. Princeton University. Comparative politics

†Kenneth T. Jowell (Emeritus), Ph.D. University of California, Berkeley. Social theory, comparative analysis

Eugene O. Lerner (Emeritus), Ph.D. University of California, Berkeley. American government, state and local politics

Herbert McClosky (Emeritus), Ph.D. University of Minnesota. Political behavior, political psychology, political sociology

†William K. Muir, Jr. (Emeritus), J.D. Ph.D. University of Michigan. Yale University. American government, constitutional law, public policy

†Hanna Frank (Emeritus Professor of Government) (Emeritus), Ph.D. University of California, Berkeley. Political theory

Austin Ranney (Emeritus), Ph.D. Yale University. American government, behavior of political parties

Robert A. Scalapino (Emeritus) Harvard University. Comparative communism, comparative politics, East Asia

Kenneth N. Waltz (Emeritus), Ph.D. Columbia University. International politics and military policy

Harold L. Wilensky (Emeritus), Ph.D. University of Chicago. Comparative politics, comparative public policy, political economy, political sociology

Associate Professors

Christopher Arseeni, Ph.D. University of Chicago. Organization theory, politics of executives

Mark Bevra, D.Phil. Merton College, Oxford University. History of political thought

Kiren A. Chaudhry, Ph.D. University of California, Berkeley. Comparative politics, political development, Middle East

J. Reu J. de Figueiredo, Jr., Ph.D. Stanford University. Formal theory, American institutions, comparative institutional analysis

M. Steven Fish, Ph.D. Stanford University. Communist and post-communist politics, political parties

Judith E. Gruber, Ph.D. Yale University. American politics, urban politics, public policy

Johor D. Levy, Ph.D. Massachusetts Institute of Technology. Technological, economic and political sociology, European political development, French politics

Laura L. Steketee, Ph.D. University of Michigan. Political behavior and methodology

Steven K. Vogel, Ph.D. University of California, Berkeley. Japan, comparative politics, political and international political economy

J. Nicholas Zieger, Ph.D. Harvard University. European politics and comparative political economy

Peter W. Singer (Emeritus), Ph.D. University of Michigan. Political psychology, American government, methodology, judicial politics

Assistant Professors

Ron Hassner, Ph.D. Stanford University. International security, religious violence, Middle Eastern politics and territorial disputes

David Karol (Acting), Ph.D. cand. University of California, Los Angeles. Religious politics, African political institutions, parties, interest groups/social movements, American political development

T. Lee, Ph.D. University of Chicago. Politics of race and ethnicity

Gordon Silverstein, Ph.D. Harvard University. Public law

The Major

The political science major consists of 12 courses for a total of 48 semester units. The requirements for the major are: (1) Political Science 1, 2, 3; two 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 100-189. Advanced placement credit does not satisfy any major prerequisites, but students scoring 4 or 5 on the American Government Advanced Placement Exam may substitute an upper division American politics course for Political Science 1 before or after declaring the major (this 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 http://www.polisci.berkeley.edu/uGrad/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 http://www.polisci.berkeley.edu/uGrad/declarationws.asp. 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.

Honor Program

Students with a 3.5 grade-point average in the major and a 3.3 grade-point average overall who have completed at least two letter-graded upper division political science courses at Berkeley are eligible for honors. Three or four honors program courses (H190A and H190B or H195A and H195B). Students are required to perform independent research or participate in an honors seminar and write a major paper or thesis. Departmental honors are awarded upon completion of the honors courses with a grade of B+ or better and a minimum grade-point average of 3.5 in the major and 3.3 in overall work at Berkeley. Enrollment in the honors courses requires the written approval of a faculty sponsor and the department chair. The deadline for obtaining all required signatures and adding space in studies classes, which include the honors courses H190A, H190B, H195A, and H195B, is the end of the third week of classes in any given semester. Interested students should consult an undergraduate adviser in 296 Barrows Hall for more information and an application.

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 http://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. (FSP)

2. Introduction to Comparative Politics. (4) Three hours of lecture and one or two hours of discussion per week. This course deals with the basic problems and processes that all political systems face and examines their particular application in political, Eastern, Communist, and Third World settings. (FSP)

3. Introduction to Empirical Analysis and Quantitative Methods. (4) Three hours of lecture and one or two hours of discussion per week. Analytical and methodological techniques in political inquiry, with an emphasis on quantification and measurement. (FSP)

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 Seminaries are open to all campus departments on topics varying from department to department and from semester to semester.

39. Freshman/Sophomore Seminar. Course may be repeated for credit when topic changes. One hour of seminar per unit. Sections 1-2 to be graded on a letter-graded basis. Sections 3-4 to be graded on a passed/not passed basis. Prerequisites: Priority given to freshmen and sophomores. Freshmen 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)

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.

84. Sophomore Seminar. (1,2) Course may be repeated for credit as topic varies. One hour of seminar per unit for fifteen weeks. Sections 1-2 to be graded on a passed/not passed basis. Prerequisites: At discretion of instructor. Sophomore seminars are small interactive courses of no more than ten faculty members and students, typically offered for one semester only. 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. (1-3) 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

100. The Development of American Political Institutions. (4) Three hours of lecture and one or two hours of discussion per week. This advanced undergraduate course examines the development of American political institutions. Focus is on developments in the party system, Congress, and the bureaucracy. The emergence of the two-party system, the rise and fall of party government in Congress, the ascendance of Congressional committee power and the seniority system, and the building of the modern executive and regulatory state are among the topics explored.

102. The American Executive. (4) Three hours of lecture and one hour of discussion per week. Analysis of principal institutions, functions, and problems of the Presidency. The Berkeley Seminar Program, with special attention will be given to topics of presidential leadership, staffing, executive-legislative relations, 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 http://learning.berkeley.edu/ucdc. Analysis of principal institutions, functions, and problems of the presidency and the federal executive branch. Special attention will be given to topics of presidential leadership, staffing, executive-legislative relations, and policy formation.

103. Congress. (4) Three hours of lecture and one to three hours of discussion per week. Prerequisites: 1 or consent of instructor. Nomination and election, constituent relations, the formal and informal structures of both houses, relations with the executive branch, policy formation, and lobbying. Sessions with Washington experts on Congress. Observation of congressional hearings and debates.

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 history of parties in the American context: their nature and function, origin and development. Party organization and structure. State, national, and local parties, their structure, function, 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 lecture and one hour of discussion per week. The nature of politics, the education of politicians, the structure, 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 campaign politics or who are looking for 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 and campaign news via the media and to prepare 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 looking for 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 and campaign news via the media and to prepare 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, and the appropriation 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)

108AW. Politics, Ethics, and Leadership. (4) Students will receive no credit for 108AW after taking 108A. Three hours of seminar and one hour of additional meeting time with instructor per week. Prerequisites: Admittance to UC Berkeley-Washington Program. See http://learning.berkeley.edu/ucdc/ for details. 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, and the appropriation 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 hours of lecture per week. In order to fulfill class requirements. 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 http://learning.berkeley.edu/ucdc. The nature of politics, the ecology of politicians, the structure, ambition, and the ethical values of social behavior in the political world. Sessions with elected officials and party workers on their vocation.

110. Cal-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 Cal-in-the-Capitol interns. The course is designed to provide prospective interns with the opportunity to gain an understanding 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 simulates the internship experience by giving class members the opportunity to work with Berkeley experts who will make demands of the students’ research skills.

110B. Cal-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 Cal-in-the-Capitol interns. The purpose of this course is to provide Cal-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, in 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 other words, the role that the news media play in the way political leaders interact with officials, or through intermediaries, as often in an indirect as direct manner is examined. How news organizations interact with officials, organized groups, and the public focus will be on media influences in areas such as who gets to make policy and the outcome of policy making.

112A. 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)

113A-113B. American Political Theory. (4,4) 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.

114. The Theorists and Their Theories. (4) Three hours of lecture and two hours of discussion per week. Prerequisites: One semester of 112 or 113. Intensive study of one great political theorist. Topic will vary with instructor. (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 evaluate it? What are the requirements for public policy and democracy? This course uses debates about contemporary governance to examine four approaches to political science and political theory. The four 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 that narratives express political commitments about rationality and power, structure and agency, and democracy. It thus promotes an awareness of the ways questions about contemporary governance are intricably linked to philosophical and normative com-

prefix=language course for business majors
prefix=language course for business majors
prefix=cross-listed course
prefix=honor's course
prefix=course satisfies R& requirement
AC suffix=course satisfies American cultures requirement
Recipient of Distinguished Teaching Award
Professor of the Graduate School
115C. Marxism and Culture. (4) Three hours of lecture and two hours of discussion per week. The purpose of this course is to trace the development of Marxism as an idea and system of political and ideological thought since its inception in the 19th century, focusing on developments in "Communist" or "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

118AC. 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 to be 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 as well as culturally: examining how the various ethnic groups have over time forged 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. Compara- tive foreign policy. (F,SP)

122A. Politics of European Integration. (4) Three hours of lecture and one hour 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 participating countries have abandoned national sovereignty and created new political authorities, economic competition, social cohesion, and cultural identity. While specialists 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 endeavors including case studies of the readings, discussions, participation in a group report on one of the major domains 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. Prerequisites: 120A highly recommended. Formerly 123. See department web site for specific course offerings. (F,SP) Staff

124A. War and Politics in History. (4) Three hours of lecture and one hour of discussion per week. The nature and conduct of war; the relationship of policies to war in history; historical varieties of strategic doctrine; the implementing of strategy; the ending of war.

124C. Ethics and Justice in International Affairs. (4) Three hours of lecture and one to two hours of discussion per week. Should nations intervene in other countries' affairs in the pursuit of rights abuses or famine? On what principles should immigration be based? Should wealthy states aid poorer states, and if so, how much? Who should pay for global environmental damage? Answers to these moral questions depend on a great deal on who we believe we have an obligation to: Ourselves? Nationals of our country? Residents of our country? Everyone in the world equally? We will examine the role that ethical thought has played in crises, in world politics, and in international relations.

126A. International Political Economy. (4) Three hours of lecture and one hour of discussion per week. Economic concepts in the study of international political behavior. Political concepts influencing the choice of economic policies.

127A. International Law. (4) Three to four hours of lecture and up to two hours of discussion per week. This course is an introduction to international law for students of international relations. The primary purpose of this course is to enhance students' understanding of the ways in which international law orders international politics. How and to what extent has it been used in resolving conflicts between nations? How and to what extent has it facilitated the achievement of common goals? What is the relationship between international law and states' foreign policies? Emphasis throughout the course is on the substantive rules of the law, the relationship between law and politics, and on historical episodes that illustrate the issues. Substantive areas include international human rights, international trade law, and international law and the use of force.

127B. International Law: Theory and Research. (4) Three hours of lecture and two hours of discussion per week. Prerequisites: 127A. The purpose of this course is to explore in greater depth the extent that international law has on the conduct of foreign relations and on international outcomes. After a brief review of some of the principles of international law, the course will turn to the more theoretical question of why states increasingly have turned to agreements in legal form to order their relations, and to what extent legalized agreements influence state behavior. The course is designed for students of international law, the course will focus on their motives and choices, but attention will be paid to the context in which governments make decisions within the constraints of law. Therefore, we will consider the role domestic politics, transnational actors (corporations, non-governmental organizations), and domestic courts may have in using law to accomplish their purposes. The course will focus on three substantive issues: international trade, international human rights, and territorial claims.

128. Chinese Foreign Policy. (4) Three hours of lecture and one hour of discussion per week. This course covers the history and analysis of Chinese foreign policy since the inception of the People's Republic of China 1949. Some attention is devoted to pre-1949 Far Eastern international relations, but only as a background to the study of the contemporary period. Emphasis is placed on domestic factors in the foreign relations, the domestic determinants of Chinese foreign policy, on the changing nature of China's relations with its Asian neighbors, and on important substantive issues.

129B. Russia after Communism. (4) Three hours of lecture and one hour of discussion per week. This course presents a broad introduction to contemporary politics and society in Russia. Other countries of the former Soviet Union and Eastern Europe will receive secondary attention. What was Soviet-type socialism and how is its legacy shaping post-Soviet Russia? Where is Russia headed-toward democracy as it is known in the West, a new form of authoritarianism, reversion to empire or something else? The so-called "color revolutions" and political transformations of the Gorbachev period will be explored. Most of the course is devoted to the post-communist period and current problems of political change and renewal. Topics to be investigated include the movement from a command economy to capitalism, struggles among emerging social interests, the changing role of the military in society, crime and social disintegration, the rise of nationalism and the search for national identity, civil war, and the transformation of political institutions. The course is recommended for juniors and seniors but is open to all students. (F,SP)

Empirical Theory and Quantitative Methods

C131A. 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 sensible application of econometric methods to empirical problems in economics and public policy analysis. It provides background 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 convincing analysis and be comfortable working with large scale data sets. Also listed as Public Policy C142 and Economics C142. Chay

133. Selected Topics in Quantitative Methods. (4) Course may be repeated for credit as topic varies. Three hours of lecture and one to three hours of discussion per week. Prerequisites: C131A. A previous course in statistics or data analysis. For more information see course description on department web site when course is offered.

C135. Game Theory in the Social Sciences. (4) Students will receive no credit for C135 after taking Economics 104. Three hours of lecture and one hour of discussion per week. Prerequisites: C131A. A previous course in statistics or data analysis. For more information see course description on department web site when course is offered.

Comparative Politics

136A. Theory in Comparative Analysis. (4) Three hours of lecture and one hour of discussion per week. Theories of democracy and the relationship between political institutions and the transformation of political institutions. Major themes in comparative analysis. Political systems, culture, authority and other themes in the study of macro-politics. Subject matter will vary with instructor. For details consult departmental announcements. (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 field of comparative politics. Use of comparison in descriptive hypothesis-testing, and theory construction. Methodological issues that arise in comparing national units and in making comparisons across different cultures. (F,SP)

137A. Revolutionary Change. (4) Three hours of lecture and one hour of discussion per week. Theories of revolution and the quantitative study of revolution. Revolution as a form of political change and its causation. Revolution in developing and industrializing countries. Subject matter will vary with instructor. (F,SP)

137B. Revolutionary Movements. (4) Three hours of lecture and one hour of discussion per week. Ideas as instruments of political action. A comparison of radical movements from the Middle Ages to the present day, emphasizing reactions to the rise of modern capitalism, industrial society and the post-industrial age. (F,SP)

137C. Transitions to Democracy. (4) Three hours of lecture per week. This course offers intense, comparative study of the wave of democratization that has swept much of Latin America, Asia, Eastern Europe, and the former Soviet Union during the past two decades. The course will analyze the theoretical literature on regime change and compare the experiences emerging from the collapse of totalitarianism, military rule, and socialism. The course will investigate the meaning of democracy, democratic transition, the roles of mass movements and elites in the process of democratization, problem of nationalism and ethnic conflict, and the relationship between democratization and economic systems. (F,SP)

138A. Democracy, Democracies. (4) Course may be repeated for credit with consent of department. Three hours of lecture and one to three hours of discussion per week. The course deals with issues of normative as well as empirical democratic theory. The first part deals with justifications for democracy as rule of the people versus other political systems. The second part deals with empirical theories about why some countries are democracies and others are not. The third part looks at whether institutional choices make a difference in the consolidation and performance of democracies. (F,SP)
138B. The Politics of Market Economics: The National Roots of the Global Economy. (4) Three hours of lecture and one to three hours of discussion per week. This course will focus on the major industrial countries in Western Europe, Japan, and the United States. It considers the adjustments they make in the changing international economy and highlights the role of domestic and international politics in those adjustments. The countries which most effectively manage the process will establish their political and economic positions for the future. Competitive development strategies make the experiences of foreign countries of great practical importance to the United States and the global economic system.

138C. Comparison of Party Systems. (4) Three hours of lecture and one hour of discussion per week. The course provides an introduction to the study of political parties and party systems in democratic societies. It examines the historical origins of parties and party systems, the main lines of cleavage in democratic politics, the substance and importance of ideologies, electoral systems and parliamentary arrangements, governing coalitions, and the policy consequences of political parties.

138D. Governance of the E-conomy. (4) Three hours of lecture and one to three hours of discussion per week. Prerequisites: Two lower division courses in social sciences or history or consent of instructor. New digital technologies, changing market structures, and institutional arrangements 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 markets, public policy, and the means of making and implementing these choices is politics. The necessarily local scope of the E-conomy extends the political and policy challenges to the international arena. This course considers recent literature on the political economy of the Internet to determine what political choices and hence which political debates are-and will be-most important. We also will examine our conceptual understanding of the nature of competition in the world of digital economics and its impact on politics, law, and socio-economic relations.

138E. The Varieties of Capitalism: Political Economic Systems of the World. (4) Three hours of lecture and one hour of discussion per week. This course examines the interaction between politics and markets, both in theory and in practice, linking classic works on political economy with current policy 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) Late industrialization in continental Europe and Japan, 3) The varieties of capitalism in contemporary countries, 4) The newly industrializing economics of Latin America and East Asia, 5) The problems of development, and 6) The transition from communism to a market economy in Eastern Europe and China.

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 historical and comparative perspective, looking at why people migrate, how citizens respond to the immigration, and how states respond to it. The first part of the course looks at the changing relationships between the state, immigrants, and citizenship. Turning to case studies, we will examine 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 latecomer state, and a newly industrialized state.

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 and Poland, presented within a broader cultural, historical, and sociological framework. Problem of economic underdevelopment and national fragmentation. Comparisons of the pre-Communist, Communist, and post-Communist periods.

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 policies of contemporary states in the Middle East; politics of power, sanctions, international movements, national politics and religious organizations. The area comprises Turkey, Iran, Afghanistan, Israel, and the Arab countries.

143A-143B. Northeast Asian Politics. (4/4) Three hours of lecture and one hour of discussion per week. The structure and evolution of political institutions in China, Japan, and Korea. Emphasis upon such topics as nationalism, political modernization, and ideology.

143C. Chinese Politics. (4) Three hours of lecture and one hour of discussion per week. An overview of Chinese politics since the fall of the Qing Dynasty. Emphasis on the People’s Republic of China and post-Mao reforms. (F,SP) O’Brien

143D. Democracy and China. (4) Three hours of lecture and one hour of discussion per week. The course has two goals: 1) to examine what democracy means in China, both in theory and practice, and 2) to assess China’s political reforms since Mao’s death in 1976. Efforts will be made to integrate historical analysis with the study of contemporary political processes and concepts. China’s electoral and legislative reforms will be examined. Attention will be paid to popular pressures for democracy mounted by dissidents and ordinary Chinese. Taiwan’s democratization will be discussed and comparisons across the Taiwan Straits will be pursued.

144B. Politics of Divided Korea. (4) Three hours of lecture and one hour of discussion per week. An overview of modern Korea divided into the Republic of Korea and the Democratic People’s Republic of Korea. The course will compare the two Koreas in terms of political, social and economic institutions, culture, political elites and modernization strategy.

145A-145B. South Asian Politics. (4/4) Three hours of lecture and one hour of discussion per week. A comparative analysis of development and change in the political systems of contemporary South Asia. (F,SP)

146A. African Politics. (4) Three hours of lecture and one hour of discussion per week. An introduction to political systems of sub-Saharan Africa. Focus on the relationship of politics to social and economic change. Emphasis is placed on the basic problems and challenges faced by the post-colonial states of the region, and on alternative strategies for dealing with them. Nationalist political instability, “neo-colonialism,” are among the specific topics that are discussed.

146B. African Politics. (4) Three hours of lecture and one hour of discussion per week. In-depth analysis of several African states from the perspectives of their contemporary state structures and political systems, and the nature of current political processes and problems. Cases are chosen so as to highlight contrasting political strategies for the pursuit of economic development and social change. For details consult departmental announcements.

146C. Conflict and Change in South Africa. (4) Three hours of lecture and one hour of discussion per week. Primary emphasis on the Republic of South Africa, focusing on the evolution of the system of racial rule, the politics of apartheid, and the challenge for political change. Analysis of South African politics is placed within the context of regional political change and of conflict between South Africa and her neighbors. The role and significance of the United States in the process of conflict and change in southern Africa will also be discussed at some length. Price

147B. Western European Politics. (4) Three hours of lecture and one hour of discussion per week. The political development of Western Europe from feudalism to the 20th century. Topical, commercialization of agriculture, English and French revolutions, industrialization, national unification, working class incorporation, democratic and authoritarian outcomes, contemporary politics, and policy. Focus on Britain, France, Germany, and Italy.

147F. Contemporary French Politics: The Republican Model in Transition. (4) Three hours of lecture and one to two hours of discussion per week. French politics and the process of forming a “Republican model” marked by an unmediated relationship between the citizen and the state, socialization into French values through secular public education, a special vocation for France on the international stage, and an aggressive, activist state. Recent developments have called the Republican model into question. This course will examine the transformation of France’s Republican model and assess its responses to contemporary challenges. (F,SP) Staff


147H. The Domestic Politics of Postwar Western Europe. (4) Three hours of lecture and one hour of discussion per week. This course examines the different ways in which the leading nations of Western Europe—Britain, France, Germany—and to a lesser extent, Italy and Sweden—have confronted common problems in the postwar period.


149. Special Topics in Area Studies. Three hours of lecture and one hour of discussion per week. See department web site for specific course offerings. (F,SP) Staff

Public Law and Jurisprudence

150. The American Legal System. (4) Students who have taken 150A during the 1983-84 or 1984-85 academic year will receive no credit for 150. Three hours of lecture and one hour of discussion per week. The nature of the American legal system; the interrelationships of judges, lawyers, police, political officials, bureaucrats, press, and general public; the political and social aspects of the legal process.

151. The Jury System. (4) Students who have taken 151B during the 1983-84 or 1984-85 academic year will receive no credit for 151. Three hours of lecture and one hour of discussion or conference per week. The place of the jury in the judicial and political system. Selection and behavior of juries on the local, state, and federal level.

157A-157B. Constitutional Law of the United States. (4/4) Three hours of lecture and one hour of
Political Behavior

161. Public Opinion, Voting and Participation. (4) Three hours of lecture and one hour of discussion per week. Prerequisites: Consent of instructor. Formerly 163A. The interaction of religion and politics. The primary focus is the impact of religion on modern American politics. This core will be supplemented by historical and comparative analyses of the role of religion in politics. Also listed as Religious Studies C185A.

C163B. Religion and Politics. (4) Three hours of seminar and one hour of discussion per week. Prerequisites: 163A and consent of instructor. Formerly 163B. The interaction of religion and politics. The primary focus is the impact of religion on modern American politics. This core will be supplemented by historical and comparative analyses of the role of religion in politics.

164A. Political Psychology and Involvement. (4) Three hours of lecture and one hour of discussion per week. Personality factors in political behavior; psychological roots of decision-making; leadership; psychological sources of political belief; conflict theory.

167. Racial and Ethnic Politics in the New American Century. (4) Three hours of lecture and one hour of discussion per week. Some of the most enduring and violent conflicts in America center on race. The goal of this course is to explore, discuss, and better understand the relationship between perceptions of racial identity, attributions of racial difference, and politics, broadly defined. We focus on the recent and persistent debates about racism, identity, rights, representation, citizenship, conflict, and coalitions. A repeated theme of this course is the question whether racial order and inequality are essential to, or an exception from, the liberal democracy in the U.S. This is a lecture course with intensive readings, written assignments, and in-class discussion. (F,SP) Staff

167AC. Racial and Ethnic Politics in the New American Century. (4) Three hours of lecture and one hour of discussion per week. Some of the most enduring and violent conflicts in America center on race. The goal of this course is to explore, discuss, and better understand the relationship between perceptions of racial identity, attributions of racial difference, and politics, broadly defined. We focus on the recent and persistent debates about racism, identity, rights, representation, citizenship, conflict, and coalitions. A repeated theme of this course is the question whether racial order and inequality are essential to, or an exception from, the liberal democracy in the U.S. This is a lecture course with intensive readings, written assignments, and in-class discussion. This course satisfies the American cultures requirement. (F,SP) Staff

169. Selected Topics in Political Behavior. (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.

Sub-National Government and Politics

171. California Politics. (4) Three hours of lecture and one hour of discussion per week. An inquiry into the political environment of the state—historical, economic, geographic, social, political institutions, government, parties, interest groups, and the policies resulting from the interaction of environment and institutions.

173S. Political Economy of the California Crisis. (4) Course may be repeated for credit with consent of instructor. Three hours of seminar per week. Prerequisites: Consent of instructor. This course examines the emergence and crisis of California's political economy. An analytical framework is developed that encompasses the secular growth and cyclical variability of California's political, economic, credit, expenditure, and revenue levels. California's economic growth and political development since 1875 will be analyzed. Specific topics covered include the Edmund G. (Pat) Brown era; Proposition 13 and the Ronald Reagan governorship; California's demographic transformation; challenges of minority economic development and political representation; the 2003 gubernatorial recall and the 2002-04 fiscal crisis. Course is part of the University of California Center Sacramento Program and is located in Sacramento. (F,SP) Dymski

175A. Urban and Metropolitan Government and Politics. (4) Three hours of lecture and one hour of discussion per week. The roles of various levels of government—local, regional, state, and national—in politics and policy-making in metropolitan regions.

176. The Unseen America. (4) Three hours of seminar per week. Must be taken on a passed/not passed basis. Social science methods and philosophies; onsite observation of "unseen" parts of local community: war veterans, elderly, alcoholics, prisoners, military personnel, factory workers, et al. Frequent field trips led by undergraduate student coordinators. Classroom discussions also directed by student coordinators under the direction of the sponsoring faculty.

179. Undergraduate Colloquium on Political Science. (1) Course may be repeated for credit. One hour of lecture per week. Must be taken on a passed/not passed basis. Political issues facing the state of California, the United States, or the international community.

Public Organization, Administration, and Policy

181. Public Organization, Administration, and Policy. (4) Three hours of lecture and one hour of discussion per week. The methods used to manage the power of the bureaucracy in the American political system. An introduction to theories of organizational behavior. The effects of administrative structure upon the creation and distribution of public benefits.

182. Public Policy and Administration in Developing Countries. (4) Three hours of lecture and one hour of discussion per week. The political economy of policy-making and administration in developing countries.

183. Administrative Behavior. (4) Three hours of lecture and one hour of discussion per week. The dynamics of public policy formulation within bureaucratic organizations; the influence upon public organizations of the legislative and the pressure groups; patterns of conflict within public organizations.

187C. Seminar: Technology and Politics. (4) Three hours of lecture and one hour of discussion per week. The relationship of technology to social/political change, scope of challenges of democratic governance and the technologies in California's state capital. 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 student involvement. One hour of the course will provide students with a challenging opportunity to engage in experiential learning in some aspect of the political, policy-making, or governmental processes in California's state capital. This course will permit students to develop a systematic understanding of the public policy and political process in California and to develop analytical writing skills to produce a 25-30 page research paper dealing with 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

C196W. Special Field Research. (10.5) Course may be repeated for a maximum of 12 units. 240-300 hours work per semester plus regular meetings with the faculty supervisor. Prerequisites: Consent of instructor. Formerly 161W. Students to 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 to three 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 faculty adviser. Also listed as History of Art C196W, Undergraduate Interdisciplinary Studies C196W, Women's 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)

198. Directed Group Study for Undergraduates. (1-4) Course may be repeated for credit. By arrangement with faculty. Students 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. Submittal of a written proposal by faculty sponsor to the department chairman one month prior to the semester in which the course is chosen to be offered. Group studies of selected topoi which vary from year to year.

199. 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. Prerequisite: Permission 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 with instructor. See departmental announcements.

201A-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 institutions. The relation between domestic political developments and the international system. The effect of economic development on political change. The effect of labor politics on national politics.

201C. Globalization and Liberalization: The Politics of Openness, and Economic Liberalization, and Development. (4) Three hours of seminar per week. The course will examine the advance of global trade and economic liberalization and the relationship between these two processes.

201D. Governance of the Economy. (4) Three hours of lecture per week. New digital technologies chang- ing market structures, and innovative business orga- nizations are transforming the economic and social landscape of the advanced industrial countries. The policy issues associated with this transformation raise fundamental philosophical and political questions of how to organize our markets, polity, and society. The means of making and implementing these choices is politics. The necessarily global scope of the E-conomy extends the political and policy challenges to the international arena. This course will explore the literature on political economy of the Internet to determine contemporary political theories, the necessary global scope of the E-conomy, and discuss case studies of leaders of politics, public and private organizations, and social movements.

201E. Institutions for Economic and Political Com- petition. (4) Three hours of seminar per week. This course compares alternative approaches to the institutional arrangements that are shaping competition in the advanced countries. Debates in political econ- omic sociology, and the economics of organization show that industrial democracies are experimenting with new rules and frameworks by which they govern themselves and coordinate economic activity. Com- parative analysis shows that a range of governance mechanisms—networks, associations, regions, and federal systems of coordination—are evolving along- side the traditional forms for organizing economic and political competition. Collective choices among these different arrangements are complex and contested, because different groups place different value on the goals of economic efficiency and growth on the one hand, and political accountability and autonomy on the other. (F,SP) Staff

202A. Theories of Development and Political Change. (4) Three hours of seminar per week. Issues of social organization and political change. Theories of progress, development, modernization and depen- dence.

204. 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 ex- amines contending definitions of political leadership and then delves into literature on agency versus struc- ture ("what difference does leadership make?"). It ex- amines the ways in which leaders typically make de- cisions, the 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 assessing their effectiveness. Students will read and discuss case studies of leaders of politics, public and private organizations, and social movements. Breslauer

205. The Nation-Building Process. (4) Three hours of seminar per week. The nation-state is the most significant institutional arrangement in the contemporary world. This course focuses on its origins, essential characteristics as well as on different patterns of national develop- ment, the relation of national development to mod- ernization, the role of internal and external factors in the national development process and current chal- lenges to the national definition of political life.


209A. Comparative Political Economy. (4) Empha- sizes on three models of modern society—"post indus- trial," "mass," and "corporatist"—as they apply to coun- tries labeled "postindustrialist, pluralist, and totalitarian. The aim: to evaluate convergence theory and explore divergent paths of development among rich countries. Special attention to stratification, the welfare state, mass media, role of intellectuals.

210. Selected Topis in Comparative Politics. (4) Course may be repeated for credit with consent of instructor. Three hours of seminar per week. Prerequisites: Consent of instructor. See departmental announcements. Topic will vary with instructor.

Political Theory

214. Themes in Western Political Theory. (4) Course may be repeated for credit. Three hours of seminar per week. Themes to be specified by in- structor.

217. Politics and Culture. (4) Three hours of seminar per week. An examination of interrelationships of pol- itics, personality, and culture, normally with specific fo- cus on American materials. Research papers will be written and discussed during the semester.

218A-218B. Colloquium in Political Theory. (4) Three hours of seminar per week. An intensive exploration of the nature of political theory and the emer- gence of theorizing about politics, with attention to se- lected aspects of social science theory and contemporary philosophy.

219. Symposium in Political Theory. (4) Course may be repeated for credit with consent of instructor. Three hours of seminar per week. Forum for the presentation of original work in political theory.

International Relations

220A. 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 inter- national relations. Relation of various strands of po- litical and social theory to international relations.

220B. Theories of International Relations. (4) Three hours of seminar per week. Prerequisites: 220A. The construction of theories in the field of international re- lations.

222. Nationalism and Imperialism. (4) Three hours of seminar per week. Prerequisites: 200 or 220. Themes in the theory of nation-building illustrated with Western and non-Western case studies.

223. 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 in- structor.

226A-226B. International Political Economy. (4) Three hours of seminar per week. Prerequisites: Introductory courses (graduate or undergraduate) in international relations, foreign policy, international or- ganizations and political economy of the contemporary world. Analysis of empirical evidence of international policies to manage or regulate interstate activities relating to trade, money, resource use, technology, and physical environment.

Empirical Theory and Quantitative Methods

231A. Quantitative Analysis in Political Research. (4) Four hours of seminar and one hour of discussion per week. Prerequisites: 132A-132B or Statistics 130A. Introductory course in the analysis of political data. (F,SP) Staff

231B. Quantitative Analysis in Political Research. (4) Three hours of seminar per week. Prerequisites: 231A or equivalent. Topics from multi-equation causal modeling and introductory econometrics, with special emphasis on procedures appropriate for political data, including survey data.

222A-222B. Formal Models of Political Science. (4) Three hours of seminar per week. Most political sci- ence data suffer from two major problems: the meas- ures of theoretical constructs contain substantial amounts of error and the social processes generating the data involve reciprocal causation ("simultaneity") or se- lection effects. In addition, political scientists often only have nominal or ordinal measures for their concepts. This course explores methods for correcting these problems through careful statistical modelling.

234. Rational Choice Theory and Democratic Pol- itics. (4) Three hours of seminar per week. This sem- inar will provide students with an introduction to the main contributions of economic models to our under- standing of normative and evaluative questions in demo- cratic states. The goal of the course is that students develop a familiarity with the potential applications of economic methodologies to the study of politics, while gaining insights into the potential limitations of economic approaches.

235. Introduction to Research Methods. (4) Three hours of seminar per week. Overview of methods of political research. Theories, concepts, variables, hy- potheses, data collection, and procedures of qualitative and quantitative research design. Data analysis, and methodological issues. Basic data collection techniques. Ap- proaches to data analysis. Provides an overview of different statistical techniques, but does not teach statistics per se.

239. Selected Topics in Methodology. (4) Course may be repeated for credit as topic varies. Three hours of seminar per week. Prerequisites: Consent of in- structor. See departmental announcements. Topic will vary with instructor.

Area Studies

241D. Politics in the Post-Communist World. (4) Three hours of seminar per week. Reading and dis- cussion seminar for graduate students. Comparative analysis of divergent paths of development among the almost 30 new states that formerly comprised the So- viet Union and Eastern Europe. Focus on changes in polities, economics, social stratification, culture, and in- ternational relations. Discussion of explanations, ex- planations for the observed patterns, and of their im- plications for theories of development, modernization, and international relations.

242. Topics in Middle East Politics. (4) Three hours of seminar per week. Prerequisites: 142B or consent of instructor. An advanced seminar, designed to encourage synthesis of empirical research and the- oretical reflection. Focused each year on a specific di- mension 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—South and 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, and different analytical approaches to Latin American politics, focusing both on major concepts (clientelism, corporatism, the state, legitimacy, nationalism) 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).

244B. 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 political science; and political culture).

244D. Collective Action in China. (4) Two hours of seminar per week with an additional hour to be arranged with instructor. This course has 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 political science; and to explore characterizations 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 “reach,” civil society, and corporatism produce insights into the structure and dynamics of Chinese politics?

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.

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 factors linked to the politics of ethnicity; civic society; ethnos; national identity; political decision-making; conflict and conflict resolution; political order and development; modernization and equity; and state and culture and international order.

247B. Western European Politics. (4) Three hours of seminar per week. Major theories 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

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 approaches to Latin American politics, focusing both on major concepts (clientelism, corporatism, the state, legitimacy, nationalism) 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. Selected Topics in Area Studies. (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 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 responses to problems of legality, authority, policy making, and political culture. Topics include campaign finance reform, lobbying regulations, bribery, voting franchise restrictions, restricting, term limitations, direct democracy, political fairness, and the design of electoral institutions.

257. Constitutional Law. (4) Three hours of seminar per week. Fundamental principles of constitutional law, leading cases, and the historical development of constitutional decision-making processes. Reading includes empirical studies, judicial opinions, jurisprudential writings and organization 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.

259. 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) Three hours of seminar per week. Credit and grade to be awarded on completion of sequence. The principal topics include the organization of enforcement and decision-making processes. Examines the effects of those controls on the character of public bureaucracies in selected political systems and the effects of those controls on the character of administrative performance.

272A-272B. National Policy Making. (4) Three hours of seminar per week. Credit and grade to be awarded on completion of sequence. Formerly 272. National policy-making processes, conical role of the presidency, and the relationships among policy-making institutions.

273. Urban Politics. (4) Three hours of seminar per week. Politics and policy-making in American cities. Historical, economic, and social context of cities. Major urban political institutions, other levels of government in urban affairs.

274. American Political Development. (4) Three hours of seminar per week. The course will consider several broad themes in American political development. The objective is to extract the central conditions, processes, and controversies that scholars have found running through American political development and try to come to terms with possible relations among them.

275. Principles of Policy Analysis. (4) Three hours of seminar per week. The study of American public policy doctrines, policy formulation, evaluation, and implementation, including the role of social science research in policy-making.

276. Race, Immigration and Identity in United States Politics. (4) Course may be repeated for credit with different instructor. Two hours of seminar and one hour of discussion 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 politics, broadly defined. It focuses on recent and contemporary historical and social contexts of race, immigration, and identity politics in the U.S. While much of the readings come from quantitative studies of political behavior, students are expected to grapple enthusiastically with parallel debates in philosophy, psychology, 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 reform issues from both empirical and normative perspectives. Topics include campaign finance reform, lobbying regulations, bribery, voting 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 organization and management theory emphasizing the major writers and distinctive contributions of various disciplines.

280B. Comparative Administration. (4) Three hours of seminar per week. A comparative analysis of the structures and processes which are used to control public bureaucracies in selected political systems and the effects of those controls on the character of administrative performance.

280C. Politics and Organization. (4) Three hours of seminar per week. The process of public policy formulation, governmental planning and programming, and administrative decision-making. Staff

287. Development Administration. (4) Three hours of seminar per week. The course is to explore, discuss, and better understand the relationship between perceptions of racial identity, attributions of racial difference, and politics, broadly defined. It focuses on recent and contemporary historical and social contexts of race, immigration, and identity politics in the U.S. While much of the readings come from quantitative studies of political behavior, students are expected to grapple enthusiastically with parallel debates in philosophy, psychology, sociology, economics, and history. (F,SP) Lee, Taeku

289. Research Topics in Public Organization. (4) Course may be repeated for credit as topic varies. Three hours of seminar per week. See departmental announcements. (F,SP)

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, the preparation of research designs and proposals for outside funding, field work, and writing the final dissertation. Presentations by graduate students working on their dissertations.

292. Directed Advanced Study. (2-8) Course may be repeated for credit. By arrangement with faculty. Prerequisites: Consent of instructor and graduate adviser. 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. (4-12) Course may be repeated for credit. By arrangement with faculty. Must be taken on a satisfactory/unsatisfactory basis. Open to graduate students advanced to candidacy for the Ph.D. degree.

299. Independent Study in Preparation for the M.A. Examination. (2) Credit may be awarded upon completion of the Master’s essay. Course may be repeated for credit. By arrangement with faculty. Must be taken on a satisfactory/unsatisfactory basis. Open only to qualified first year graduate students working toward the M.A. degree.

602. Individual Study for Doctoral Students. (4-12) Course may be repeated for credit. By arrangement with faculty. Must be taken on a satisfactory/unsatisfactory basis. Individual study in consultation with the major field advisor, intended to provide opportunities 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.

Professional Courses

301. Graduate Student Instructor Training Seminar. (2) Credit may be repeated for credit. Ten 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 Psychology. The goal is to be taken simultaneously with the first semester of teaching as a GSI. The course functions as a participatory workshop. Although the course is intended for first-time GSIs, it is not a prerequisite to be a GSI, but rather, how to be an effective political science teacher, now and at later stages in professional careers. Workshop time will be divided among presentations by the instructor, discussions of required readings, and discussion of weekly assignments in relation to challenges encountered by GSIs in the course of their teaching. (F, SP)

398. Professional Preparation for Graduate Student Instructors. (4) Course may be repeated for credit. By arrangement with faculty. Must be taken on a satisfactory/unsatisfactory basis. Individual research under supervision of faculty members. Open to students engaged in supervised research projects in Political Science.

Psychology

(Office of Letters and Science)

Department Office: 3210 Tolman Hall, (510) 642-5928
http://ps.berkeley.edu/department
Chair: Sheldon Zedeck, Ph.D.

Professors

Joseph J. Campos, Ph.D. Cornell University. Social/emotional development of infants; perceptual development.

Martin V. Covington, Ph.D. University of California, Berkeley. Problem-solving, thinking, educational psychology.

Philip A. Cowan, Ph.D. University of Oregon. Perceptual and cognitive processes of thought, attention, memory, and language development.

Stephen Hinshaw (Chair), Ph.D. University of California, Los Angeles. Child clinical psychology, developmental psychopathology.


Oliver P. John, Ph.D. University of Oregon. Self-concept, self-perception accuracy and bias, personality development.

Dacher Keltner, Ph.D. Stanford University. Emotion, individual differences in emotion; social interaction; conflict and cooperation.


Robert Krieger, Ph.D. University of California, Los Angeles. Attention and memory, neuropsychology and physiology, cognitive neuroscience.

Jonas Langer, Ph.D. Clark University. Cognitive development in infancy and early childhood, private cognition.

Robert W. Levenson, Ph.D. Vanderbilt University. Human psychopathology; aging, and marriage.

Mary B. Main, Ph.D. Johns Hopkins University. Attachment, individual differences in relationship representation in discourse, emotional regulation and gender roles.

Gerard A. Mendelsohn, Ph.D. University of Michigan. Causal attribution and interpersonal action, individual differences in social cognition.

Chaitan J. Nemeth, Ph.D. Cornell University. Influence processes, decision making and creativity in small groups.

Stephen E. Palmer, Ph.D. University of California, San Diego. Visual perception, memory and cognition.


Sonia W. Stack, Ph.D. Yale University. Motivation, effort, utility, and self-facilitating prophecies; school reform.

Thomas Wicker, Ph.D. University of Chicago. Mathematics, models of cognition for concept formation; statistics and experimental design.

Sheldon Zedeck, Ph.D. Bowling Green University. Industrial/organizational/personnel psychology.

Irving Zuckerman, Ph.D. University of Chicago. Biological rhythms; seasonal reproductive cycles, photoperiodism; energy balance; behavioral endocrinology, menstrual temperature regulation.

Jack Block, Emeritus, Ph.D. Stanford University. Personality theory, personality development.

Kayreen H. Craik, Emeritus, Ph.D. University of California. Personality theory, personality development.

Susan Ervin-Tripp (Emeritus), Ph.D. University of Michigan. Pragmatics, everyday language use, bilingualism, language, and communication.

Harrison H. Gough, Emeritus, Ph.D. University of Minnesota. Social Psychology.

Ervin R. Harter, Emeritus, Ph.D. University of Texas. Social perception and psychological measurement; psychology of well-being.

Daniel Kahneman, Emeritus, Ph.D. University of California, Berkeley. Judgment and decision making.

GEOFREY KEPNER, Distinguished Professor, Northwestern University. Data analysis, statistical methods.


Donald A. Riley, Emeritus, Ph.D. Ohio State University. Learning in animals.

Mark R. Rosenzweig, Emeritus, Ph.D. Harvard University. Neuroscience and behavior.

Dan I. Simons, Emeritus, Ph.D. Harvard University. Psychology, attention, perception, and language.

Susan Y. Tipp (Emeritus), Ph.D. University of Chicago. Pragmatics, everyday language use, bilingualism.

David Wessel, Emeritus, Ph.D. University of Minnesota. Social Psychology.

Lori Markson, Ph.D. University of Arizona. Language and conceptual development in children: understanding the self, identity, and empathy.

Rodolfo Mendoza-Denton, Ph.D. Columbia University. Prejudice, stereotyping, cultural influences on social cognition.

Noami Sobel, Ph.D. Stanford University. Human affect.

Frederic Thunnissen, Ph.D. University of California, Berkeley. Neural basis of vocal learning in songbirds, auditory physiology.

Johnathan Walks, Ph.D. University of Cambridge. The role of the prefrontal cortex in the organization and control of goal-directed behavior.

Adjunct Professors

Caryn Pape Cowan, Ph.D. Center for Psychological Studies, California Institute of Technology. Perception, setting, style, child development.

Lynn Robertson, Ph.D. University of California, Berkeley. Representation, decision making, visual search and feature binding mechanisms; attention and perceptual organization.

Ravena M. Heston (Emerita), Ph.D. University of California, San Francisco. Psychology of women: creativity.

William Prinzmetal, Ph.D. Claremont Graduate School. Visual perception, attention, cognition.

Affiliated Professors

Martín Banks (Optometry)

Paul Eilman (University of California, San Francisco)

Jack Glaser (Public Policy)

Robert MacCoun (Public Policy)

Barbara Meliers (Haas School of Business)

Richard Murzio (University of San Francisco)

Kurt Organista (Social Welfare)

Michael A. Ranne (Education)

William McKinley Runyan (Social Welfare)

Leslie Stryker (Social Welfare)

Philip Tellock (Haas School of Business)

Eli Turir (Social Welfare)

David Wessel (Music)

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 in interactions. The major 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, industrial, 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 or primary interest of a single faculty or department. The emphasis at Berkeley is upon empirical research and the analytical analysis of the behaviors of animal and human behavior. Since it is our experience that students who are interested in the major often have been introduced 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 theories 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. (3) For students planning to 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 “decade” courses; and (4) elective courses. The four areas of psychology (cognition, brain and behavior; developmental; clinical; and social)
Lower Division Requirements

Admission to the Major. Psychology is a popular major and in some 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 pre-majors, as are peer advisers.

Prerequisite Areas, Courses, and Options. 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 50.

Biological Science: Two courses from Molecular and Cell Biology 32, 61, 64; Biology 1A, 1B, 11; Integrative Biology 31 (AP Biology units will satisfy this prerequisite provided the score was a 4 or 5).

Social Science: Two courses from Anthropology 3, Sociology 3, Linguistics 5, Political Science 1 or 2.

Quantitative: One course from Statistics 2, 20, or 21; Math 40A or AP Statistics units will satisfy this prerequisite).

Prerequisite courses must be taken on a letter-grade basis. No course to be passed/not passed basis. Prerequisite courses must be taken on a letter-grade basis or in the department brochure. The brochure and application admission can be obtained by writing to the Student Services Office, Department of Psychology, University of California, Berkeley, Berkeley, CA 94720-1652, or the application can be filled out online using the Web site noted above.

Graduate Training Programs. The graduate program designs for doctoral students interest in pursuing advanced study and conducting original research in psychology. New admissions are restricted to candidates for the Ph.D. Students are accepted: Priority given to freshmen and sophomores.

Graduate Training Programs for Doctoral Students. The program in pursuit of a graduate degree in psychology is designed to develop an effective scholar and researcher. The program is comprised of a core sequence for that area. Depending on the area of specialization, and (4) individual study and research (258 and 259). 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 Teaching Assistant. Students must be eligible for the Ph.D. degree. The final requirements of all programs consist of the successful passing of the qualifying examination, taken usually during the third year, and the submission and approval of the dissertation.

General Psychology

Further Information. The department course descriptions issued at the beginning of each semester provide more detailed and up-to-date information about courses offered by the Psychology Department.

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 the major; students considering a psychology major are directed to 2. (F,SP)

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 department. See Introduction to Courses and Curriculum section of this catalog. (F,SP)

14. Psychology of Gender. (3) Two hours of lecture and one hour of discussion per week. Examination of various factors in the development of feminine and masculine roles, including personality, social processes, biology, and culture.

Graduate Study

Preparation. The Department of Psychology regards completion of an undergraduate major in psychology or a cognate field as the best prepa-

ratation 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 back-
ground in psychology is advised to defer application until appropriate undergraduate course work has been completed.

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.

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ods 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 will cover some of the important psychological theories, interpretations, and uses that have been made of dreams. Students will be encouraged to keep dream diaries to provide an experimental 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 and will cover some of the important psychological theories, interpretations, and uses that have been made of dreams. Students will be encouraged to keep dream diaries to provide an experimental component to the class and so that they may apply the class topics and do research using the material they generate themselves.

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 biological, comparative, developmental, personal, 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: C115A or consent of instructor. Development of biological psychology, including sensory and perceptual processes, neural maturation, and disease, and mental subnormality. Emphasis on nervous system models of these problems and areas of potential application of basic research development.

112. Sensory Processes: Hearing. (3) Two hours of lecture and one hour of discussion per week. Prerequisites: 110 or consent of instructor. Survey of relations between behavioral and biological processes. Topics include sensory and perceptual processes, neural maturation, natural bases of motivation, and learning.

114. Biology of Learning and Neural Plasticity. (3) Two hours of lecture and one hour of discussion per week. Prerequisites: 110 or consent of instructor. Introduction to comparative animal behavior and behavioral physiology in an evolutionary context, including but not limited to analysis of behavior, genetics and development, learning, aggression, reproduction, adaptability, and physiological substrates of mental disorders. Prerequisite: 112A or 112B. Three hours of lecture and one hour of discussion per week. 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. Consideration of topics that span the gap between the properties of individual molecules and complex cognitive behavior, including the cellular properties of single nerve cells, synapses, 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 and consent of instructor; a course in mammalian physiology recommended. Neural and endocrine mechanisms underlying behavior, especially reproduction, of non-human mammals. Process of sexual differentiation of the androecordine system will be emphasized. Hormonal influences on feeding, birhythms and aggressive behavior. Also listed as Integrative Biology C143B.

117. Biological Psychology and Problems of Human Dysfunctions. (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, behavioral effects of medication, maintenance of pain, 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. Two 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 basic principles of psychopharmacology. 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 central nervous systems processes such as attention, motivation, learning, and memory.

Cognitive Psychology

120A. Introduction to Cognitive Psychology. (3) Students will receive no credit for 120A after taking 120B. Two hours of lecture and one hour of discussion per week. Prerequisites: 101 or consent of instructor. Principal concepts and research concerning human processing of visual, auditory, and symbolic information; object recognition and classification; perception and comprehension of language; attention; theoretical models and experimental techniques in the study of imagery and other cognitive processes.

C120B. Basic Issues in Cognitive Science. (4) Students will receive no credit for 120B after taking Psychology 120A. Three hours of lecture and one hour of discussion per week. Theoretical foundations and current controversies in cognitive science will be discussed. Topics covered will include the study of human and non-human cognitive processes; the nature of perception, imagination, memory, categorization, thinking, judgment, and development will be considered from the perspectives of philosophy, psychology, computer science, and cognitive science. Prerequisite: A strong background in a programming language and familiarity with the philosophy of mind, cognitive linguistics, neuroscience, psychology, and computational models. Also listed as Cognitive Science C102.

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, and retain information. Specific topics include learning and memory, sensory processes, navigation and migration, communication, and cross-species comparisons of behavior. Material will be drawn from the ethological, behavioral/experimental, and, to a lesser extent, the neurosciences literature.

122. Introduction to Human Learning and Memory. (3) Two hours of lecture and one hour of discussion per week. Prerequisites: 101 is recommended. For details, see Psychology 122A. 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 psychological applicability of modern linguistic theory and to social psychological aspects of language behavior. Also listed as Linguistics C124.

125A. Second Language Learning and Bilingualism. (3) Two hours of lecture and one hour of discussion per week. Prerequisites: Background in linguistics and psychology recommended. Process and outcomes in second language acquisition; linguistic and cognitive development of “inter-languages.” Processing of linguistic information by bilinguals (perception, recall, translation); structure of bilingual discourse. Child bilingualism, bilingualism in Spanish-Speaking countries, in Israel, and in North America. This course satisfies the American cultures requirement.

125B. Second Language Learning and Bilingualism. (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 second language acquisition. Topics will include psycholinguistics; perception of color, space, shape, and motion; pattern recognition and perceptual attention. Also listed as Cognitive Science C126.

127. Cognitive Neuroscience. (3) Two hours of lecture and one hour of discussion per week. Prerequisites: Consent of instructor. 110 or 120A or C120B, or Cog Sci C100. This course will examine research investigating the neurological basis of cognition. Material covered will include the study of brain-injured patients, neuropsychological research in animals, the study of normal cognitive processes in humans with non-invasive behavioral and physiological techniques (e.g., PET scan, brain waves), and computational modeling. Topics to be covered include visual perception and object recognition, attention, motor control, language, and development. Also listed as Cognitive Science C127.

128. Topical Seminars in Cognitive 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 offerings check with the Student Services Office each semester.

129. Scientific Approaches to Consciousness. (3) Two hours of lecture and one hour of discussion per week. Prerequisites: 1 or Cognitive Science C1; or 120A or C120B or Cognitive Science C100. This course will examine the nature of human consciousness from the interdisciplinary perspective of cognitive science. It will cover topics of the philosophy of mind, cognitive linguistics, neuroscience, psychology, and computational models. Also listed as Cognitive Science C102.

Clinical Psychology

130. Clinical Psychology. (3) Two hours of lecture and one hour of discussion per week. Prerequisites: 1. Theoretical and empirical approaches to the explanation of psychological disorders will be covered. The relation between theories of psychopathology and theories of intervention. A critical evaluation of the effects of individual, family, and community approaches to therapeutic and preventive intervention. Thematic focus of

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
141. Development During Infancy. (3) Two hours of lecture and one hour of discussion per week. Prerequisites: 100B or 130, or consent of instructor. This course will discuss problems in early development with special emphasis on the first two years of life. Students will compare theories of development and methods of research used to study development.

142. Cognitive Development. (3) Three hours of lecture and one hour of discussion per week. Prerequisite: 141 or consent of instructor. This course will present a psychological perspective on the development of children from birth to adolescence. It will illustrate the effects of genes, environment, and social context on children's development.

143. Language Acquisition. (3) Two hours of lecture and one hour of discussion per week. The course will explore the psychological aspects of language development, including the acquisition of language by children from birth to adulthood and the role of social factors in language development.

146. Developmental and Biological Processes in Attachment. (3) Two hours of lecture and one hour of discussion per week. Prerequisite: 110 or consent of instructor. This course will study the development of attachment, including the ways in which emotional bonds are formed between individuals and the importance of attachment in psychological well-being.

150. Psychology of Personality. (3) Two hours of lecture and one hour of discussion per week. Prerequisites: 120A or 121B, or 140, or consent of instructor. This course will study the major theories of personality, including the biological, psychological, and sociocultural factors that influence personality development.

151. Assessment of Personality. (3) Three hours of lecture and three hours of laboratory per week. Prerequisites: 140 and consent of instructor. The course will introduce students to the methods and theories of personality assessment, including the use of personality tests.

155. Personality Research and Assessment. (3) Three hours of lecture and one hour of discussion per week. Prerequisite: 150 or consent of instructor. This course will cover the methods of personality research, focusing on the use of personality tests and the development of personality theories.

166AC. Cultural Psychology. (3) Three hours of lecture and one hour of discussion per week. Prerequisites: 140, or consent of instructor. This course will examine the psychological aspects of cultural diversity, including issues related to race, ethnicity, and social justice.

168. Topical Seminars in Personality. (3) Course may be repeated for credit with different topic and consent of instructor. Three hours of seminar per week. Prerequisites: Consent of instructor. This course will focus on the study of personality and social psychological processes in the context of culture and society.

169. Personality in Practice. (3) Three hours of lecture and two hours of discussion per week. Prerequisites: 150 and consent of instructor. This course will provide opportunities for students to apply their knowledge of personality to real-world situations.

170. Laboratory in Research Methods. (3) Two hours of lecture and one hour of discussion per week. Prerequisite: 130, or consent of instructor. This course will provide hands-on research experience for students interested in pursuing research in psychology.

171. Laboratory in Personality Research. (3) Two hours of lecture and three hours of laboratory per week. Prerequisite: 160 or consent of instructor. This course will provide students with opportunities to conduct research in personality and social psychology.

172. Laboratory in Clinical Psychology. (3) Two hours of lecture and one hour of discussion per week. Prerequisite: 160 or consent of instructor. This course will provide students with opportunities to conduct research in clinical psychology.

173. Laboratory in Social Psychology. (3) Two hours of lecture and one hour of discussion per week. Prerequisite: 160 or consent of instructor. This course will provide students with opportunities to conduct research in social psychology.

174. Laboratory in Educational Psychology. (3) Two hours of lecture and one hour of discussion per week. Prerequisite: 160 or consent of instructor. This course will provide students with opportunities to conduct research in educational psychology.

175. Laboratory in Developmental Psychology. (3) Two hours of lecture and one hour of discussion per week. Prerequisite: 160 or consent of instructor. This course will provide students with opportunities to conduct research in developmental psychology.

Developmental Psychology

140. Developmental Psychology. (3) Two hours of lecture and one hour of discussion per week. Prerequisites: 1. This course explores the psychological development of children from birth to adolescence, in a wide range of areas including biological, cognitive, linguistic, social, and personality development. It also covers the effects of genes, experience, and social context on children's development.
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.

168. Topical Seminars in Social Psychology. (3) Course may be repeated for credit with different topic and consent of instructor. Three hours of lecture per week. Prerequisite: Consent of instructor. For a precise schedule of offerings check with Student Services Office each semester.

Industrial-Organizational Psychology

180. Industrial-Organizational Psychology. (3) Two hours of lecture and one hour of discussion per week. Primarily for majors. Introduction to the field of industrial psychology, covering fundamental theory and concepts in personnel and social aspects in the field. Concerns the activities involved in developing and maintaining organizations.

182. Personnel Psychology. (3) Two hours of lecture and one hour of discussion per week. Prerequisites: Psychology major and admission to the Cluster Program. Two hours of discussion per week. Prerequisites: Psychology major and admission to the Cluster Program. Weekly discussion of the nature, methods, and aims of contemporary psychology. Students are expected to read an article each week and actively participate in the discussion with the speaker. (F)

C191, 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? How will they be used? These are the questions the course will try to answer. Also listed as Architecture C119 and Undergrad Interdisciplinary Studies C137.

Special Topics in Psychology. (3) Course may be repeated for credit as topic varies. Three hours of lecture per week. Prerequisites: Consent of instructor. Course examines current problems and issues in psychology.

H194A-H194B. Honors Seminar. (2,2) Two hours of seminar per week. Prerequisites: Required of and limited to psychology majors in the honors program. H194A-H195B should be taken concurrently. In the fall semester the seminar will concentrate on issues of research design, ethics, and data analysis using statistical search, help us improve the design of offices? What should offices look like 10-50 years from now? How will they be used? These are the questions the course will try to answer. Also listed as Architecture C119 and Undergrad Interdisciplinary Studies C137.

Special Topics in Psychology. (3) Course may be repeated for credit as topic varies. Three hours of lecture per week. Prerequisites: Consent of instructor. Course examines current problems and issues in psychology.

H194A-H194B. Honors Seminar. (2,2) Two hours of seminar per week. Prerequisites: Required of and limited to psychology majors in the honors program. H194A-H195B should be taken concurrently. In the fall semester the seminar will concentrate on issues of research design, ethics, and data analysis using statistical search, help us improve the design of offices? What should offices look like 10-50 years from now? How will they be used? These are the questions the course will try to answer. Also listed as Architecture C119 and Undergrad Interdisciplinary Studies C137.

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measures, interaction of color and form, color vision anomalies. Also listed as Vision Science C216.

218. Issues in Cognitive Neuroscience. (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. Discussion of recent papers on the comparative and physiological study of learning and cognition.

Cognitive Psychology

222. Consciousness. (3) Three hours of lecture per week. Formerly 220B. Survey of psychological, philo-

sophical, and neuroscience approaches to con-
sciousness. Introspection. The mind-body problem. Au-
tomatically. Explicit-implicit dissociations in memory, perception, and emotion. Implicit emotion and moti-
vation. Sleep and dreams. Anxiety and coma. Hyp-
osis. Meditative states. Consciousness in nonhuman animals and computing machines.

C223. Proseminar: Problem Solving and Under-
standing. (3) Three hours of lecture per week. Pre-
requisites: Consent of instructor. Formerly C220D. Students will examine problem solving in children and adults, from a predominantly cognitive science per-
spective, beginning with an examination of thinking in-
volved in diverse problem types. Students will then an-
alyze the literature concerning cognitive issues that transcend problem types, including representation, “un-
derstanding” or knowledge of knowing, access to one’s own cognitive processing, categorization, the architecture of knowledge, and the control of cog-
nition. Also listed as Education C223A.

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 to-
ward 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 graded structure/protype views; the idea of basic cat-
egories (with its proliferation of implications); categor-
azation and life events; personality trait designations as categories; categories viewed as theories; develop-
mental issues in categorization; and the relationship between categorization and language.

229. Cognition, Brain, and Behavior 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: Grad-
uate standing or consent of instructor. Reports and discus-
sions of original research in the area of cognitive psychology. Staff

Clinical Psychology

230A-230B. Proseminar: Clinical Psychology. (3,3) Three hours of lecture per week. Formerly 230. Ex-
amination of and historical themes in the development of modern clinical psychology, with special attention to concepts of mental health and psy-
chopathology, models of intervention and clinical re-
search, and the relationship of theory and research to insti-
tutions. Fall seminar will focus on both adult and child psychopathology, and spring will focus on ethical mi-
ority mental health and community/prevention.

231B. Clinical Neuropsychology. (3) Three hours of lecture per week. Study of clinical neuropsychology, including foundational issues in the field of neuropsych-
pathy, pertinent research, and applications to clini-
cial cases.

231E. Expectations and the Prevention of School Failure. (3) Three hours of lecture per week. Exam-
ination of the theory and research on expectancy pro-
cesses in the classroom and in schooling, with par-
ticular focus on classroom and school practices which enhance the social processes of instruction and pro-
mote the development of competence in children.

232. Cognitive, Behavioral, and Emotional As-
Sessment of Children. (3) Three hours of lecture per week. This course will feature theoretical and clinical issues pertinent to assessment of children. Topics to be covered include the nature of intelligence and con-
troversies in IQ testing, the use of checklists and struc-
tured interviews related to clinical psychological eval-
uation, and self-report instruments related to internalizing disorders (e.g., anxiety, depression). Graduate students in clinical psychology will receive first priority for course enrollment.

233A-233B. Clinical Assessment: Theory, Ap-
lication, and Practice. (3) Three hours of lecture per week. Prerequisites: First-year status as graduate student in clinical psychology or enrollment in limited training in clinical psychology. The clinical interview and principles and methods of intellectual, objective, and projective clinical assessment. Readings, dis-
cussion, and supervised experience in clinical as-
essment. The first semester will focus on adult as-
sessments; the second semester will focus on child/adolescent assessments. Required of all clinical students.

234A. Contemporary Psychoanalytic Theory. (3) Three hours of lecture per week. Contrast and evalu-
ation of various modern psychoanalytic theories, including the models’ basic theory of mind, how motivation and behavior are understood, how change in symptoms or personality can be brought about, and the relationship to social function and the scientific status of clinical const-
structs and attempts to verify them through quantitative method.

234B. Theories of Child and Family Therapy. (3) Three hours of lecture per week. Analysis of major ap-
proaches to the problem of developmental change in chil-
dren, families and couples.

234C. Theories of Community Intervention. (3) Three hours of lecture per week. Examination of the-
ory and research underlying social and community ap-
proaches to the promotion of mental health and the prevention of dysfunction. Analysis of major methods of intervention, with a special focus on consultation.

234D. Theories of Cognitive Behavior Therapy. (3) Three hours of lecture per week. Central features of cognitive behavior therapy; basics of several cognitive-
behavioral theories; treatment planning and effec-
tiveness of methods; methods for assessing, con-
ceptualizing and treating patients; theories, methods, and efficacy evidence for several disorders, primarily anxiety and affective disorders.

235. Clinical Research. (3) Three hours of lecture per week. Review of research design; statistical; clinical methods of gathering and interpreting data; case ex-
amples from the research in progress of participants in the seminar.

237A. Intervention: Adult Psychotherapy. (1) Course may be repeated for credit. One hour of lecture per week. Prerequisites: Limited to second and third year clinical psychology students or consent of instructor. Psychological intervention with adults. (F,SP)

237B. Intervention: Child and Family Therapy. (1) Course may be repeated for credit. One hour of lecture per week. Prerequisites: Limited to second and third year clinical psychology students or consent of instructor. Psychological intervention with children, couples and families. (F,SP)

237C. Intervention: Community. (1) Course may be repeated for credit. One hour of lecture per week. Pre-
requisites: Limited to second year clinical psychology students or consent of instructor. Consultation, program evaluation, program development, and pre-
vention in community settings. (F,SP)

237D. Intervention: Assessment. (1) Course may be repeated for credit. One hour of lecture per week. Pre-
requisites: Limited to clinical psychology students or consent of instructor. Psychological assessment of chil-
dren and adults. (F,SP)

237E. Intervention: Clinical Decision Making. (3) Course may be repeated for credit. Three hours of seminar per week. Prerequisites: Limited to second and third year clinical psychology students or consent of instructor. Clinical psychology intervention with couples. (F,SP)

237F. Intervention: Couples Therapy. (1) Course may be repeated for credit. Two hours of seminar per week. Prerequisites: Limited to second- and third-year clinical psychology students or consent of instructor. Clinical psychology intervention with and evaluation of spe-
cially designated populations.

239. Clinical Seminar. (1) Course may be repeated for credit. One and one-half hours of seminar per week. Must be taken on a satisfactory/unsatisfactory basis. Prerequisites: Graduate standing or consent of instructor. Reports and discussions of original research in the area of clinical psychology. Not all participants need to attend in any given semester. Students are expected to attend and to enter into the discussions. Required course for all students in the clinical graduate program. (F,SP) Staff

Developmental Psychology

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 in the cellular level. Development in animals and humans, including neurogenesis, synaptogenesis, cell death and synapse elimination; and the genetic and experiential determinants of neu-
ral development. Exploration of the origins and de-
velopment of knowledge from infancy through child-
hood; the development of children's concepts across multiple domains including physics, biology, math, and psychology. Survey of facts and theories of language acquisition; focus on what learners acquire and the role of input in the process; review of phonology, syntax, and morphology. (F,SP) Staff

C240A. Proseminar: Biological and Perceptual De-
velopment. (3) Three hours of lecture per week. Sur-
vey of the biology of the nervous system; the cellular interactions during development in animals and humans, including neurogenesis, synaptogenesis, cell death and synapse elimination; perceptual de-
velopment, including development of the eye and ear, of the central visual and auditory pathways, and of vi-
sual and auditory perception; and the genetic and ex-
periential determinants of neural and perceptual de-
velopment.

240B. Proseminar: Emotional, Social, and Psy-
chopathological Development. (3) Three hours of lecture per week. Survey of current research and theory on the origins and maintenance of normal and pathological socioemotional development in infancy. Exploration of biological, psychological, familial, and cultural factors affecting social and emotional develop-
ment through childhood and adolescence. Focus of the course includes how normal and disor-
erictors are maintained in some children, while others shift into or out of clinically diagnosable disorders.

242. Cognitive Development. (3) Three hours of lec-
ture per week. Formerly 240C. Theory, research, and methods for studying the mechanisms and processes involved in cognition from infancy through early childhood. Top-
ics include learning, memory, categorization; explo-
ration of the origins and development of knowledge in multiple domains including physics, biology, number, mind, lan-
guage, and morality. (F,SP) Staff

243. Language Development. (3) Three hours of lec-
ture per week. Formerly 240D. Theoretical and meth-
odological approaches to the study of language acquisition. Topics include the acquisition of phonol-
ogy, syntax, and morphology, with a focus on the role
of input versus the innate endowment of the learner. (F.SP) Staff

249. Developmental Seminar. (1) Course may be repeated for credit. One and one-half hours of seminar per week. Must be taken on a satisfactory/unsatisfactory basis. Prerequisites: Graduate standing or consent of instructor. Reports and discussions of original research in the area of developmental psychology. Not all participants need report in any given semester, but all are expected to attend and to enter into the discussions. Required course for all students in the developmental graduate program. (F.SP)

Personality Psychology

250A. Perspectives in Personality: Overview. (3) Three hours of lecture per week. Introduces the perspective and research programs of the personality faculty to graduate students having an interest in their field. Each week, attention is directed to the work of a different faculty member associated with the personality program.

250C. Proseminar: Social Cognition. (3) Three hours of lecture per week. Surveys empirical and theoretical approaches to our understanding of perception, memory, thought, and language concerning ourselves, other people, interpersonal behavior, and the social world in which we live. Emphasis is placed on the integration of problems in social, personal, and clinical psychology with the concepts and principles employed in the study of nonverbal and verbal cognition.

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, and dispositions considered in the everyday evaluations people make of self and others.

C25OE. Perspectives in Personality: Personality Theory. (2) Two hours of seminar per week. Major approaches to personality theory, including psychodynamic, behavioral, psychometric, and humanistic theory. Analysis of research in culture and personality, the study of lives, and feminist psychology. Analysis of relations between the life, work, and social-historical context of Freud, Skinner, Rogers, Eysenck, Margaret Mead, and others, with attention to the origins, course, and (on occasion) fall of each tradition. Also listed as Social Welfare C210H.

259. Personality Seminar. (1) Course may be repeated for credit. One and one-half hours of seminar per week. Must be taken on a satisfactory/unsatisfactory basis. Prerequisites: Graduate standing and consent of instructor. Reports and discussions of original research in the area of personality psychology. Not all participants need report in any given semester, but all are expected to attend and to enter into the discussions. Required course for all students in the personality graduate program. (F.SP)

Social Psychology

260B. Proseminar Course in Social Psychology. (3) Course may be repeated for credit. Three hours of lecture per week. Extensive coverage of theoretical and research literature. Topics include history and systems, attitudes and attitude change, interpersonal processes, methods and research, small groups, and organizational behavior. Required course for all students in the social graduate program.

269. Social Seminar. (1) Course may be repeated for credit. One and one-half hours of seminar per week. Must be taken on a satisfactory/unsatisfactory basis. Prerequisites: Graduate standing and consent of instructor. Reports and discussions of original research in the area of social psychology. Not all participants need report in any given semester, but all are expected to attend and to enter into the discussions. Required for all students in the social graduate program.

Special Course Offerings

290. Seminars. Course may be repeated for credit. Two hours of seminar per week.
Professor-in-Residence
John Balme, M.D.

Adjunct Professors
Genevieve Ames, Ph.D.
Michael Bates, Ph.D.
Cheryl Chemiak, M.P.H.
Thomas E. McKone, Ph.D.
David Ragland, Ph.D.
George Rutherford, M.D.
Gary Shaw, M.P.H., Dr.P.H.
Eric Stover, M.D.
Julia Walsh, M.D.

Adjunct Associate Professors
Joseph Eisenberg, Ph.D.
Nina Tienko Holland, Ph.D.
Susan Ivey, M.D.
Lee Kasukuri, Ph.D.
Mark Nicas, M.P.H., Ph.D.
Nancy Padman, M.S., M.P.H., Ph.D.

Adjunct Assistant Professors
Jeffrey Burack, M.D., M.P.P., B. Phil.
Arthur Dumoulin, Ph.D.
Sanghee Li, Ph.D.
Sueellen Miller, Ph.D.
Douglas Oman, Ph.D.
Craig Steirnmaus, Ph.D.
May-Chao Wang, D.P.H.

Clinical Professors
James Chin, M.D., M.P.H.
Gastan Micco, M.D.
Linda Neuhouser, Dr.P.H.
Kent Olson, M.D., HMS
Alan B. Steinbach, Ph.D., M.D.
Arne E. Stevens, M.D.
John E. Swartzberg, M.D.
David B. Troxel, M.D.
Harvey Weinstein, M.D., M.P.H.

Clinical Associate Professors
Maria Corona, M.D.
Howard Guter, M.D.
Larry Latner, Ph.D.
Balaraj Pulpulandi, M.D.
James P. Seward, M.D., M.P.P.

Clinical Assistant Professors
John Compagno, M.D.
Robert Freedman, M.D.
Lawrence Friedman, M.D.
Kenneth Gipelma, M.D.
Deryn Van Brunt, M.D.

Affiliated Professors
Eugene Bardach, Ph.D. (Public Policy)
Frederick C. Collignon, Ph.D. (City and Regional Planning)
John Ellwood, D.(Public Policy)
Harold S. Luft, Ph.D. (UC San Francisco)
Lorraine Midani, Ph.D. (Social Welfare)
Steven Segal, Ph.D. (Social Welfare)
Frances Van Loo, Ph.D. (Business Administration)

Lecturers
Tomas Aragon, M.D.
A. Marice Aske, J.D.
Hindi Bauer, M.D., M.P.H.
Jeffrey Brall, Ph.D.
Martha Campbell, Ph.D.
Louis Cheng, Ph.D.
Cheryl Cherifel, M.P.H., Ph.D.
Hanna Dan Cohen, M.S.
Thomas Cutting, M.A.
Richard Daniels, Ph.D.
Lori Dorfman, Dr.P.H., M.P.H.
Sandra Dratier, Dr.P.H.
Maria Ekstrand, Ph.D.
Benjamin Frattelli, M.P.H.
Peter Grant, J.D., Ph.D.
Bernard Greigo, M.P.H.
Robert Kosans, M.D., M.P.P., M.B.H.
Vincent Iacopo, M.D.
Elizabeth James, J.D.
S. Stephen Kegeles, P.D.
Kathy Kodama, P.A.M.
Amy Kyle, Ph.D.
Paula Maureen Laurier, M.P.H.
David Leon, M.S.
Steve Lipton, M.P.H.
Katherine Lorenz, M.D.
Kathleen McBurney, Dr.P.H., M.P.H.
Stephan Morris, Ph.D.
Thomas Piazza, M.A.
Cheri Pies, Dr.P.H.
Barbara Plog, M.P.H.
Ndota Prata, M.D.
Peggy Reynolds, Ph.D., M.P.H.
Abby Rincon, M.P.H.
Scott Robinson, Ph.D.
Michael Samuel, Dr.P.H.
James Simpson, J.D., M.P.P.
Harry Snyder, M.P.H.
Karen Sidai-Gutierrez, M.D., M.P.H.
Melanie Tetzlaff, Ph.D.
Kevin Williams, J.D., M.P.H.
Marilyn Winkleby, Ph.D.

Field Program Supervisor
Jeffrey Oxendine, M.B.A., M.P.H.

Associate Field Program Supervisor
Kathleen McBurney, Dr.P.H., M.P.H.

Assistant Field Program Supervisors
Paul Leung, M.D., M.P.H.
Kevin Williams, J.D., M.P.H.

Academic Coordinators
Diane Driver, M.S.W., D.S.W.
Alice Gandergaard, M.P.H.
Maureen Lalhti, Ph.D.

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 of human rights and cultural perspectives that abound in a multicultural context and world.

Lower Division Requirements
+ **Biological Science Requirement:** Biology 1B (required before declaration: minimum letter grade, B-); Biology 1A or 2 are courses from the following: Molecular and Cell Biology 11, 32, 41, 50, or 61; Nutritional Sciences 10.
+ **Mathematics Requirement:** Two courses from the following (or equivalent): Mathematics 32, 16A, 16B, or H16B, 1A, 1B or H1B.
+ **Social Sciences Requirements:** Three courses, determined at least at two of the following groups: Psychology 2: Sociology 1, 3, 3AC, or 5; Economics 1, 2, or 3; Anthropology 3, 3AC, or 12AC; Political Science 2: Sociology 1, 3, 3AC, or 5.
+ **Recommended:** Public Health 14.

Upper Division Requirements
+ **Public Health 142A, 150A, 150B, 150D.**
+ **Twelve units of elective courses.** Students who plan to continue to graduate school in public health are strongly advised to concentrate elective units in only one or two areas of study.

For lists of approved elective courses and more information on the major, visit the undergraduate page at the Public Health web site at http://sph.berkeley.edu:7133/degrees/undergrad.htm.

Overview of Graduate Programs
The mission of the School of Public Health (SPH) is to develop and apply knowledge from multiple disciplines for the promotion and protection of the health of the human population, giving due consideration to principles of human rights and cultural perspectives that abound in a multicultural context and world. SPH faculty, support resources, and curricula focus on both the fundamental disciplines and their applications to particular problems. Within the University and wider community, faculty strive to advance the understanding of the fundamental disciplines, apply them to problems faced by human populations, and provide the interdisciplinary context in which public health practitioners and scholars may develop needed skills and capacities.

The program of study leading to the professional M.P.H. degree is based on a series of foundation courses. In addition, M.P.H. students concentrate in one of the following areas: Epidemiology/bio-statistics, 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.

Programs of study leading to the following academic degrees are administered by groups of fac-
ulty from the School of Public Health and other depart-
ments:

• Biostatistics—M.A., Ph.D.
• Environmental Health Sciences—M.S.;
  M.S./Ph.D., Ph.D.
• Epidemiology—M.S., Ph.D.
• Health Services and Policy Analysis—Ph.D.
• Infectious Diseases and Immunology—Ph.D.
• Joint Medical Program—M.S.

Applications for admission to the School of Public Health are accepted for the fall semester only because of the sequencing of courses. To apply for graduate study, you must complete the Graduate Division application (Graduate Application for Ad-
missions and Fellowships Forms A-G). The deadline
is December 1 for admissions and fellowships. The ap-
plication is available on the web, or you may submit applica-
tions by mail by February 1. Additional information on the applica-
tion is available at www.grad.berkeley.edu/prospective.

For further information about the School of Public Health, go to http://sphp.berkeley.edu or visit or write
the School of Public Health, University of California,
Berkeley, 19 Earl Warren Hall #7360, Berkeley, CA
94720-7360. E-mail: sphinfo@berkeley.edu.

Lower Division Courses

14. Healthy People: Introduction to Health Pro-
motion. (4) Three hours of lecture and one hour of dis-
cussion per week. Introduction to personal and com-
munity health, drawing on physical and social science
principles including stress, public health approaches to
drugs, nutrition, exercise, the environment, communica-
tion, and sexuality. Readings, lectures, and dis-
cussions explore key issues for students and examine
topics in the context of contemporary American society.
Public health approaches to disease preven-
tion 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/discus-
sion per week. Introduction to the field of public health
with a focus on a selected topic. Topic to be de-
gressed in one of the department's three sections;
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 Biology C103. (SP)
Portny

103. Drugs, Health, and Society. (2) Two hours
of lecture per week. An introduction to the social
forces that influence health behavior, health care, and
medical care in U.S. society. The course will be offered at
the undergraduate level. The course will cover the
social and political factors that influence the access to
and use of health care. Key programs and policies for
the elderly will be examined in sociopolitical per-
spective with attention to their salience in a multi-
cultural society. (SP) Burke

142A. Math in Epidemiology, Public Health, and
Biostatistics. (4) Four hours of lecture and one hour of
lab per week. Focus on mathematical and statistical
meth
ods in epidemiology, public health, and biostatis-
tics. Emphasis on the social and political factors
that influence and influence the interpretation ofnumer-
ical data. Prerequisites: One year of calculus.
(V) Cohn

140. Introduction to Risk and Demographic Stats-
tics. (4) Three hours of lecture and one hour of dis-
cussion per week. Descriptive statistics, probability
theory, and concepts of demographic phenomena. (SP)
Minkler

142A. Introduction to Probability and Statistics
in Biology and Public Health. (4) Three hours of lecture
and two hours of discussion per week. Descriptive
and inferential statistics for the biological sciences.
Prerequisites: One year of biology or an equivalent
course in a quantitative field. (SP) Lahiff

143. Introduction to Statistical Methods in Com-
putational and Genomic Biology. (4) Three hours
of lecture and one hour of laboratory per week. Prereq-

114. Issues in Personal and Community Health
Promotion. (3) Three hours of lecture and one hour of
discussion per week. Introduction to issues and trends
in the health promotion field. Topics may include:
organizational and community change, behavior change,
public health policy, and the role of the health profes-
sional. Prerequisites: Consent of instructor. (SP) Griego

115. Controversies in Biomedical Ethics. (3) Three
hours of lecture and one hour of discussion per week.
Controversial issues to be examined from the perspec-
tive of the humanities, social sciences, and law. Study
issues such as world hunger, AIDS, drugs, and the pop-
ulation explosion. (F) Staff

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
completed sequence. Must be taken on a passed/not
passed basis. Prerequisites: Consent of in-
structor. Topics include health promotion, medical self-
care, and delivery of health care services. Through a
combined theory and practice approach, topics are prov-
ed as part of personal and community health. Prevention
of drug problems at the policy, community, organiza-
tion, and individual levels will be examined. (SP)
Griego

105. Policy, Planning, and Evaluation of Health
Promotion in a College Setting. (3) Course may be
repeated for credit. Three hours of lecture per week.
Course is divided into three sections corresponding to
particular campus health field experiences in which
students may be involved. (F) Griego

113. Campus/Community Health Impact Program.
(3) Three hours of lecture per week. The primary goal
of this course will be to challenge students to begin
the process of understanding the connectedness be-
tween personal health and the larger context of soci-
ety and the impact to community. Classes will cover
the principles of public health and social justice, health
promotion, and political economy. Current public
health issues, community health issues, divers-
ity 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)
Binczewski

B prefix=language course for business majors
C prefix=course satisfies R&C requirement
AC suffix=course satisfies American cultures requirement
R prefix=course satisfies R&C requirement
H prefix=honors course

*Professor of the Graduate School
Recipient of Distinguished Teaching Award
Topics include the biologic basis of human heredity, Spear, K. Smith and infections. The applications of biology to disease prevention will be emphasized. (F) Boyle, Buehring, Crawford, Potts, Riley, Sensabaugh

150D. Introduction to Health Policy and Management. (3) Three hours of lecture/discussion per week. 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

150E. Introduction to Social and Behavioral Health. (2) Two hours of lecture per week. This course introduces students to the principal contributions of the social sciences and behavioral sciences to health and illness. Contributions include insights into behavior of individuals and institutions as well as into the processes by which we assign risks for illness and resources for prevention. Prerequisites: Intermediate to SAS Programming. (2) recommended. May be taken concurrently. Formerly 144B. Intermediate to SAS Programming. (2) This course is intended to serve as an introduction to the SAS programming language for Windows in an applied, workshop environment. Emphasis is placed on the facilities available in a public health 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, recode, label, and format variables as well as sort, subset, concatenate, and merge data sets. (SP) Lain

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 microorganisms; their relationships with human disease and pathogenicity; and in maintaining health. With 162L, satisfies most requirements for a laboratory course in microbiology. May be taken without 162L. (F) Buehring, Danielson

162L. Public Health Microbiology Laboratory. (1) Two hours of laboratory 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

170B. Toxicology. (3) Three hours of lecture and one hour of discussion per week. Prerequisites: Consent of instructor. Introduction to the basic principles of drug action. Focus is on mechanisms of action and practical application for their future work. (SP) Staff

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 the topic of 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, soci-ology, anthropology, archaeology, physiology, contem- porary politics, and history to explore the richness of human sexual behavior and reproduction and the inter- action between our biology and our culture. (SP) Potts

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 sci-entific responses to human disease from their begin-nings to their current status as major forces in modern society. It will consider the evolution of diagnoses, treatment, and prevention of human morbidity and death from both a humanistic and scientific perspec-tive. It will invite graduate and undergraduate students preparing for careers in public health, nursing, optometry, or the other health sciences, students interested in public policy and health-related law, and students of history or the other humanities who wish an overview of medicine and health from a broad historical perspective. (SP) Hook

183A, 183B. The History of Medicine, Public Health, and the Allied Health Sciences. (3,3) Credit and grade to be awarded on completion of sequence. Prerequisites: Senior status; 3.3 overall GPA. Regular individual meetings with a faculty advisor at completion of H195B. H195A will concentrate primarily on researching a topic in public health. H195B will concentrate on development and writing up results in the area of interest to the student. Students must enroll for both semesters of the sequence. (F) 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. Supervised experience relevant to specific aspects of public health practice off-campus organizations. Regular individual meetings with faculty sponsor and written re-port 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. (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 restric-tions apply; see the Introduction to Courses and Curricula section of this catalog. (F,SP) Staff

Graduate Courses

200A. Current Issues in Public Health Ethics: Re-search 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 in ethics through cases representa-tive of different public health dilemmas. The cases con-sidered include treating homeless people with TB, ra-tioning medical care in the United States, conducting HIV studies of maternal-fetal transmission in Africa, managed care policies and setting priorities, the role of the pharmaceutical industry, and the implications of genetic information. The goal is to enable students to develop an analytical methodology that has practical application for their future work. (SP) Hapern

C200B. Conceptual Dilemmas in Public Health and Medicine. (2) Two hours of seminar per week. This course addresses a series of major conceptual dilemmas confronted by both public health and medicine in studying health and disease. While many of these dilemmas or problems form a largely unseen “background” to the health sciences, each is an integral part of the theoretical foundation brought to epidemiologic studies. Readings are drawn from the epidemiological, biological, social science, and historical/philosophical literatures. Topics include problems in assigning cause and effect; definitions of disease and disorder; mind and body; evolutionary biology and the health sciences; how society manages risk; the role of the press in communicating health information; and the nature of suffering and the goals of public health and medicine. (F) Boyle, Reingold

200C. Public Health Core Breadth Seminar. (2) Two hours of lecture per week plus optional 45-minute discus-sion. Prerequisites: Graduate standing. This course is designed to provide students with an 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 as this relates to an analysis of public health and the environment, behavior, and management sciences. By the con-clusion of this course, students will be able to describe seminal as well as current theories and methods underlying societal efforts to 1) manage am-bient and place-specific toxins; 2) manage behaviors that involve individual and collective risk taking; 3) build organizations that manage toxins as well as in-dividual and collective risk taking; and 4) use the power of the state to manage toxins as well as individual and collective risk taking. (F) Catalano, Satariano, Smith
200D. Public Health: Putting Theory into Practice. (2) Two hours of lecture per week. Prerequisites: 142A, 200C, and 250A. This course trains students in public health through discussion, lecture, case analysis, and field trip experiences. Students will integrate learning from previous courses with work experience. Cases emphasize current national/global public health issues and practice. At course completion, students will be able to identify, research, and respond to real-life public health challenges; work effectively and efficiently in problem-solving groups; professionally present the results of group research projects for feedback and evaluation. (SP) 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, this course is the purposeful part 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 profession can benefit from social science knowledge development related to their practice or research interest. (SP) Staff

201C. Health, Behavior, and the Family. (3) Three hours of lecture/discussion per week. Prerequisites: Graduate standing or consent of instructor. A critical discussion of recent developments in health-relevant psychological theories as they relate to the implementation, design, and evaluation of programs designed to improve the health status of the individual and the family. (SP) Staff

201E. Public Health Interventions: Theory, Practice, and Research. (2.3) Two hours of seminar per week. Prerequisites: Previous experience with health interventions and doctoral student status or consent of instructor. This course focuses on the practitioner factors that affect health and the interventions that can promote health. Students examine the determinants of health and the theory, history, types, ethics, 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 or consent of instructor. A critical discussion of recent developments in health-relevant psychological theories as they relate to the implementation, design, and evaluation of programs designed to improve the health status of the individual and the family. (SP) Staff

202A. Ethnic and Cultural Diversity in Health Status and Behavior. (3) Three hours of lecture per week. Prerequisites: Graduate standing or consent of instructor. Focus on ethnic and cultural diversity in health behavior as a basis for public health programs. Consideration of U.S. ethnic minority groups and cultural groups in non-Western societies. Health status and behavior examined in context of relevant social and cultural factors (social class, acculturation, political economy). Influence of socio-cultural background on concepts of health, illness, and health-seeking behavior. Implications for planning public health programs and policies. (SP) Herd

202B. Public Health Implications of Human Violence. (3) Three hours of lecture per week. Prerequisites: Consent of instructor. This course focuses on the role of public health practitioners as change agents, stressing in particular the values and ethical issues that arise within the context of diverse cultural, community, and political environments. (F) Herd

202D. Community Organization and 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 cultural, community, and political environments. (F) Herd

202E. Violence Prevention: Community-Based Public Health. (3) Course may be repeated for credit. Two hours of seminar per week. Prerequisites: 201A, 201C, and 250A. Students will be invited to explore the paradigm of evolutionary psychology and compare it with the standard social science framework for understanding all aspects of violence. (SP) Potts

202F. Advanced Social and Cultural Theory. (3) Three hours of seminar per week. Prerequisites: 201A, doctoral student status, and consent of instructor. This course is designed to link current advances in sociological, anthropological, and political economic theories to public health. The course contains 15 hours of discussion per week. An overview of violence as a public health problem including specific sessions on data, research, and surveillance; development, policy and various approaches to the prevention of violence. Educational methods include lectures, presentations by public health role models who practice violence prevention in the community, class exercises, and class discussions. (SP) Fest

202G. Advanced Alcohol Research Seminar. (1) Course may be repeated for credit. Two hours of seminar per week. Prerequisites: Social Welfare 238B or consent of instructor. This 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, issues related to the classification of alcohol-related problems, and health services research. Guest presentations 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-relevant 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 250L. (SP) Staff

202H. Violence Prevention: Community-Based Public Health. (3) 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 cultural, community, and political environments. (F) Herd

203A. Theories of Health and Social Behavior. (3) Three hours of lecture per week. Prerequisites: Back- ground in social and behavioral sciences. Consent of instructor. This course provides a survey of theoretical perspectives and their application in analyzing the behavioral, social, and cultural dimensions of community health problems. The course utilizes research on understanding health behaviors and examining the strengths and weaknesses of particular theories for addressing complex health problems and mounting effective community-based intervention programs. (SP) Herd

204A. Mass Communications in Public Health. (3) Three hours of lecture/discussion per week. Prerequisites: Graduate standing or consent of instructor. The course covers a survey of theoretical perspectives and their application in analyzing the behavioral, social, and cultural dimensions of community health problems. The course utilizes research on understanding health behaviors and examining the strengths and weaknesses of particular theories for addressing complex health problems and mounting effective community-based intervention programs. (SP) Herd

204B. Training as an Educational Methodology. (3) Three hours of lecture/discussion per week. Prerequisites: Graduate standing or consent of instructor. Presents theories, concepts, and principles of training as a field and as a policy. Examines the types of educational situations in which training, as an intervention, is best applied. Analyzes training problems, including the justification of training as an educational methodology. (SP) Pies

204C. Multicultural Competence in Public Health. (3) Three hours of lecture per week. Prerequisites: Enrollment in Multicultural Health Specialty area or consent of instructor. This class will focus on developing a functional understanding of cultural competence and will 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 as a public health practitioner. The course will achieve these goals through a combined approach of lecture, discussion, and class presentations of a case study. (F) Fraticelli

205. Program Planning, Development, and Evaluation. (3) Three hours of lecture/discussion per week. Prerequisites: Graduate standing or consent of instructor. This course is designed to link current advances in socio- logical, anthropological, and political economic theories to public health. The course contains 15 hours of discussion per week. An overview of violence as a public health problem including specific sessions on data, research, and surveillance; development, policy and various approaches to the prevention of violence. Educational methods include lectures, presentations by public health role models who practice violence prevention in the community, class exercises, and class discussions. (SP) Staff

206A. Measuring Dietary Intake and Nutritional Status. (2) Two hours of lecture/discussion per week. Prerequisites: Graduate standing or consent of instructor. This course is designed to link current advances in socio- logical, anthropological, and political economic theories to public health. The course contains 15 hours of discussion per week. An overview of violence as a public health problem including specific sessions on data, research, and surveillance; development, policy and various approaches to the prevention of violence. Educational methods include lectures, presentations by public health role models who practice violence prevention in the community, class exercises, and class discussions. (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 (WIC), the National School Lunch Program, the School Breakfast Program, Head Start, the Child Care Food Program, and the Elderly Nutrition Program. (F) Wang

206C. Nutritional Epidemiology. (3) Three hours of lecture per week. This course develops the ability to read published nutritional epidemiology research critically. Basic research methods in nutritional epidemiology will be reviewed, and issues in design, analysis, and interpretation unique to nutritional epidemiology will be presented. This will be accomplished by reading current publications and discussing research questions, lecture/discussions, and problem sets. (F) Abrams

207A. Public Health Aspects of Maternal and Child Nutrition. (2) Two hours of lecture/discussion per week. Prerequisites: Graduate standing or consent of instructor. An overview of the federal and state programs and problems during pregnancy, lactation, infancy, childhood, and adolescence. Introduction to nutritional assessment of individuals and communities. Discussion of programs, policies, and objectives, and the nutritional status for mothers and children. Course is intended for students of Maternal and Child Welfare, and other disciplines as well as nutrition students. (F) Abrams
210. Maternal and Child Health Specialty Area Core Course. (3) Three hours of lecture per week. Prerequisites: Consent of instructor. The core course in maternal and child health provides an integrated approach to issues, programs, and policies in the field of maternal and child health. The following concepts will be explored and addressed in depth: (1) the foundation of maternal and child health, including an overview of the field, history, and foundation of MCH practice and programs, and attention to financing of these programs; (2) MCH data sources, uses of data, and related issues; and (3) development of maternal and child health programs, including discussions with community professionals to address practical problems, public policy concerns, current issues in MCH, and current research in MCH. In addition, the course addresses public health issues facing women, children, and adolescents will be explored, including how and why these are distributed in these populations. (F) Staff

210C. Needs Assessment in Maternal and Child Health. (3) Three hours of seminar/discussion per week. Prerequisites: Graduate student in Public Health. Formerly 210B. The purpose of this course is to provide a conceptual and practical understanding of health needs and the tools that can be used for conducting needs assessments in maternal and child health. The course is aimed at students who anticipate working in situations that involve measuring health problems in communities and designing health services. It introduces students to survey techniques, focusing on community-based participatory research (CBPR) and other methods used in health and related surveys. (SP) Eskenazi

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) addressing specific human rights concerns of women, children, and older adults; and (4) advocating for health policy on human rights; and (5) participating in human rights education and advocacy. The course will also examine issues of universality of human rights and cultural and social factors in the role of accountability in the past abuses in prevention. (F) 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 mothers, infants, and children on 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 and social well being. Themes are examined from a multidisciplinary perspective including demographics, health, family structure, environmental influences, occupational health, and migration. (SP) Guendelman

212D. International Health Specialty Area Core Course. (3) Three hours of lecture per week. Prerequisites: Consent of instructor. The International Health Core Course is a survey course for students who intend to work in developing countries. We review the main contributors to global burden of disease, discuss current interventions, and possible approaches for the future. We cover the impact of scale, sustainability, international donor limitations, the role of consultants and technical assistance, the complexities of relationships between donors and recipients; franchising as a service delivery model; budgeting. Students are required to write a proposal for funding, a letter of intent, or critical analysis of a contemporary health problem. (SP) Hosang, Potts, Walsh

213A. Family Planning, Population Change, and Health. (3) Three hours of lecture/discussion per week. Prerequisites: Graduate standing or consent of instructor. Course examines the determinants of family size and the role played by contraception, voluntary sterilization, and induced abortion in the transition to small families. It looks at the prospects for access to fertility regulation in developed and developing countries and discusses the factors that have made for successful family programs as well as those that have generated controversy. It examines the relationship between family planning and the health of women and children and at the role of family size in economic development and environmental health. It also looks at advances in family planning, organization and promotion of services and discusses ethical issues facing providers. (F) Campbell, Potts

215. Money, Management and Maternal and Child Health. (3) Three hours of lecture per week. Prerequisites: Graduate standing or consent of instructor. Money, Management and Maternal and Child Health is a seminar course in program evaluation. The course is aimed at students who anticipate working in situations that involve measuring health problems in communities and designing health services. It introduces students to survey techniques, focusing on community-based participatory research (CBPR) and other methods used in health and related surveys. (SP) Eskenazi

217C. Aging and Public Health. (3) Three hours of lecture per week. Prerequisites: Graduate standing or consent of instructor. The purpose of this course is to provide an overview of research, practice, and policy in the area of aging and public health. Topics will include the epidemiology of aging; race, class, gender, and aging; nutrition and the elderly; and current health policy surrounding aging. Themes running throughout the course include the epidemiology of aging; race, class, gender, and aging; nutrition and the elderly; and current health policy surrounding aging. Themes running throughout the course include the concepts of aging as active community participation, the importance of the changing family, and the role of the family in shaping health care. This course will cover the genetics and molecular biology of the disease, as well as biomarkers, epidemiology, risk factors, treatment, and prevention. It also includes the role of social 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 serve as a model for the analysis of complex diseases with multiple genetic and environmental causes, and late onset neurodegenerative diseases. Listed also as NER Sc 217D. (SP) Rundall

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. Prerequisites: Introductory course on program evaluation such as 218B. This is an advanced course on evaluation research. It is intended for those who have already completed an introductory course on program evaluation (such as 218B), and it will especially be 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 the describe the important differences in the theories that were developed in each stage; (2) describe the theories of at least one theoretical evaluation theorist and evaluation theorists and discuss the strengths and weaknesses of each approach; (3) identify the theoretical perspectives that have influenced the implementation of published evaluation studies; (4) distinguish among the 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, or consent of instructor. An overview of the theoretical and methodological foundations of qualitative research as applied in various aspects of qualitative research. (SP) Staff

219B. Advanced Methods: Interview and Questionnaire Design. (3) Three hours of lecture/discussion per week. Prerequisites: Doctoral student in public health or a related discipline, or consent of instructor. The study of interviews, questionnaires, and other methods used in health and related surveys. (SP) Kaskutas

219C. Community-Based Participatory Research in Public Health. (3-4) Three hours of lecture/discussion per week. The goal of this seminar is to provide advanced and 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
221. The City and Health: Emphasis on Oakland. (3) Three hours of lecture per week. Prerequisites: 224A or consent of instructor. This course examines the major theories and frameworks for analyzing urban development and the health of its population. Emphasis is placed on the health services system. The course will draw on the student’s knowledge of systems, science and management. The student will complete an extended contract negotiation. (SP) Catalano

222. Health Planning and Policy: An International Perspective. (3) Three hours of lecture/discussion per week. Prerequisites: Graduate standing or consent of instructor. An introduction to health care organization, planning, policy, and financing of the health care system in each country and as related to their economic system. (F) Duhl

223A. Introduction to the Health Care System. (3) Three hours of lecture per week. Prerequisites: Graduate standing or consent of instructor. An introduction to the health care system. (F) Duhl

223B. Advanced Secretarial Practice. (4) Four hours of lecture/discussion per week. This course is designed to prepare the student for entry into the health care field. The course will include topics in research, legal issues, and the health care system. (SP) Rundall

223C. Strategic Management and the Organization of Health Services. (3) Three hours of lecture per week. Prerequisites: Business Administration 205 or 224A or 223A or consent of instructor. Students are required to analyze each country’s health care system and the impact of competition and regulation on its development and growth. The course will cover health care organizations including physician group practices, health systems, hospitals, HMOs, suppliers, pharmaceutical and biotech companies. The course will focus on the trends in health care organizations and the impact of competition and regulation on their development and growth. (SP) Scheffler

223D. Social and Behavioral Health Research: Introduction to Survey Methods. (3) Three hours of lecture per week. The course introduces the student to the design and implementation of research surveys and the analysis of survey data. The course will cover topics such as sampling, interviewing, questionnaires, data analysis, and the interpretation of survey results. (SP) Mukherjee

223E. Advanced Secretarial Practice. (4) Four hours of lecture/discussion per week. This course is designed to prepare the student for entry into the health care field. The course will include topics in research, legal issues, and the health care system. (SP) Rundall

224A. Health Care Organizations and Environmental Administration. (3) Three hours of lecture per week. Prerequisites: Business Administration 205 or 224A or consent of instructor. This course examines the structure and functioning of health care organizations, including physician group practices, health systems, hospitals, HMOs, suppliers, pharmaceutical and biotech companies. The course will focus on the trends in health care organizations and the impact of competition and regulation on their development and growth. (SP) Scheffler

224B. 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 microeconomics, or an equivalent course. This course covers the principles of economic and policy analysis in health care organizations. It examines integration of the health care delivery system and the impact of competition and regulation on the financing of health care services. Alternative models of health care system reform are presented and analyzed. (SP) Scheffler

224C. Public Health and the Economy. (3) Three hours of lecture per week. Prerequisites: Graduate standing or consent of instructor. This is a survey of different health care systems in the United States and other countries. The course will focus on the role of government and the role of the public in health care delivery. (F) Catalano

224D. Organizational Analysis of the Health Care Sector. (3) Three hours of seminar/discussion per week. Prerequisites: One doctoral-level organizational theory course or consent of instructor. This course examines the major theories and frameworks for analyzing health care organizations. Emphasis is given to the application and testing of theories in the health care sector. Resource dependency, contingency, population ecology, institutional, and neo-institutional theories are covered. (F) Bloom
237A. Health Care Finance. (3) Three hours of lecture/discussion per week. Prerequisites: Graduate standing. Overview of role and function of finance and financial entrepreneurs in health care. Topics include analysis of financial statements, cost behavior and profit analysis, pricing of services, planning and budgeting, variance analysis, time value analysis, risk and return, 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 per week. Prerequisites: Administration 203 or consent of instructor. Financial management and regulation of health care institutions, including relationship between institutional and national policies with regard to reimbursement, incentive systems, public regulation, and control of health care costs. Course is based on a computer game simulation. (SP) Gertler

228. Cost-Effectiveness Analysis in Health and Medicine. (3) Three hours of lecture per week. Prerequisites: Regression analysis. This course introduces mathematical methods to estimate costs and effectiveness in health services. Specific topics include theory and empirical estimations of cost analysis, effectiveness analysis, and cost-effectiveness comparison. (SP) Hu

229. Public Health and the Law. (3) Three hours of lecture per week. Prerequisites: 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 topics include salient legal principles and the legal rules. (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. Topics include political ideology and health policy, interest group politics in health, Marxists and materialist interpretation of health policy, and the politics of health care technology, implementation, bureaucracy, and health professions. (F) Palpant

231A. Research Methods for Health Services. (4) Four hours of lecture and two hours of computer laboratory per week. Prerequisites: 142A. Applied regression analysis. Emphasis given to use when these techniques are encountered in professional careers. The course is intended for students in all divisions of the School of Public Health. (F) Aspey, Simpson

232. Doctoral Seminar in Public Health Application of Time Series Analysis. (3) Two hours of lecture and one hour of laboratory per week. Prerequisites: Doctoral standing or consent of instructor. An introduction to time-series analysis of potential interest to public health researchers and practitioners. Applications in forecasting and 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 introduce advanced MPH students to the ability and the techniques to analyze 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 considered. The course will be offered as a seminar. The instructor will present a taxonomy of the literature and review the controversies in the field. Students will then present literature of special interest to them. The presentations will locate the piece in the taxonomy and explore the implications of 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 analysis of health 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, 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. Offered odd-numbered years. (F) Chen

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 non-parametric models, hypothesis testing, and methods for analyzing censored (partially observed) data with covariates. Topics include marginal estimation of a survival function, 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 of measurement error and estimation 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. Offered odd-numbered years. (SP) van der Laan

240C. Biostatistical Methods: Computational Techniques with Applications to Observational Survival Data. (4) Three hours of lecture and two hours of laboratory per week. Prerequisites: Statistics 200A or equivalent (may be taken concurrently). An introduction to computational techniques used in the analysis of observational survival data. Related statistical topics span the entire spectrum of the discipline and include stochastic processes, compartmental models, biostatistical concepts and modeling relevant to the design and analysis of multivariate cohort studies, matched and unmatched case-control studies, and intervention studies. Logistic regression and the analysis of 2×2 tables. (SP) Jewell

242A. Biometrical Data Analysis—Pathological Incomplete Data and Pattern Recognition. (4) Three hours of lecture and two hours of discussion per week. Prerequisites: 142A-142B or equivalent, or consent of instructor. Survey of biostatistical methods; mixture, clustered, grouped, incomplete, Cox-model, and truncated data simulation and analysis. Offered odd-numbered years. (SP) Tarter

242B. Biometrical Data Analysis—Model Free Curve Estimation. (4) Three hours of lecture and two hours of discussion per week. Prerequisites: 142A-142B or equivalent. Familiarity with linear regression and statistical software, preferably Splus or SAS. The course will cover the statistical issues surrounding estimation when repeated outcome measurements are made on the same individual. The course will emphasize the re- gression model approach and focus on the use of Splus to concentrate on continuous outcome data and linear models but we will also examine other sorts of data (e.g., binary and count data) and perhaps other nonlinear repeated measurement models. The course will be from the analysis side. Lecture time will be spent both discussing the statistical methodology and techniques for implementing this methodology in both Splus and SAS. The statistical mathematical material for this course includes normal linear models, maximum likelihood estimation, Bayes estimation, multivariate normal distribution and matrix algebra for statistics. Offered even-numbered years. (SP) Hubbard

243A-243B. Special Topics in Biostatistics. (1-3,1-3) Three hours of lectures per week. Current issues in biostatistics research. Topics will vary from term to term depending on student demand and faculty availability. Possible topics are bioassay, meta-analysis, compartmental models, biostatistical consulting, covariance structure models, bootstrap and jackknife methods, artificial intelligence techniques in biostatistics. (F) Staff

243C. Information Systems in Public Health. (2) Two hours of lecture/discussion per week. An introduction to new information delivery 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 people with minimal 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; applications in biology and health. Offered even-numbered years. (F) Chiang

244B. Stochastic Processes in Biology and Health. (3) Three hours of lecture per week. Prerequisites: 244A. An introduction to stochastic processes. Topics include the Poisson processes; birth processes, death processes, migration processes, a general birth process; martingales; stochastic model of epidemics; birth-death processes; queuing 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: 142B or equivalent consent of instructor. The following topics are discussed in the course: matrix algebra and biological application of multiple regression, loglinear models, discriminant analysis, principal components. Instruction in statistical computing is given in the laboratory session. (F) Lahiff

246A. Censored Longitudinal Data and Causality. (4) Three hours of lecture and two hours of laboratory per week. This course is designed for students with previous experience in biostatistics 240A-240B. The course is to develop data analysis skills using statistical software. (SP) van der Laan

246B. Exploratory Data Analysis. (3) Three hours of lecture per week. Prerequisites: College calculus and linear algebra. Introduction to fundamental concepts and techniques in exploratory data analysis and basic statistical inference. Material presented will focus on exploratory analysis of one and two samples. Topics include basic probability and statistical concepts, descriptive methods, one- and two-sample nonparametric methods, and computer-intensive methods. Offered even-numbered years. (F) Chen

248. Statistical/Computer Analysis Using SPLUS. (3) Two hours of lecture/discussion per week. Prerequisite: 142A may be taken concurrently or 142A-142B and 245. Formerly 249. The material to be presented will focus on learning the programming language SPLUS, which will be taught in the context of biomedical and biological application of statistical methods and scientific inference. Offered even-numbered years. (F) Selvin

249. Biostatistical/Epidemiological Data Applications. (3) Two hours of lecture/discussion per week. Prerequisites: 245 and 248 or equivalent. Formerly 250A. Advanced biostatistical methods are used to analyze real data. The weekly lecture and discussion sessions will focus on advanced biostatistical methods applied to real datasets. Fifteen datasets are analyzed, each representing a different type of data collection design (e.g., case-control, matched data, survival data). The datasets are taken from articles published in biomedical journals and illustrate the use of statistical techniques to address substantive problems. The primary goal of the course is to develop data analysis skills using statistical methods (e.g., logistic, Poisson, log-linear, and Cox regression techniques) by exploring these datasets. Emphasis will be placed on the practical aspects of these topics that are not commonly found in textbooks or presented in classes on epidemiologic theory. It is hoped that the student develops the day-to-day skills necessary to present a well-documented, accurate, and thorough review of epidemiologic literature. (F) A. Smith, Steinman

250. Epidemiological Methods I. (3) Three hours per week and one hour of laboratory per week. Prerequisites: Consent of instructor. This course teaches use of CMS and SAS in performing univariate and multivariate analyses; students also learn critically to review scientific literature, and problems are based on research papers published in biomedical journals. The material to be covered includes multivariate regression models, logistic regression, Poisson regression, log-linear regression, and computer-intensive techniques. Offered even-numbered years. (SP) Selvin

250B. Epidemiological Methods II. (4) Four hours of lecture and two hours of laboratory per week. Prerequisites: 250A or an equivalent introductory course in biostatistics. This course is intended as an intermediate level course in the field of epidemiology. Topics include the sensitivity, specificity, predictive value of a test, and a brief introduction to logistic regression. Offered even-numbered years. (SP) Selvin

251A. Practicum in Epidemiologic Methods I. (4) Three hours of lecture and one hour of laboratory per week. Prerequisites: 250A; 142B or 241B concurrently; consent of instructor. This course is three-semester course in the analysis of the data-set-of-the-week and to discuss issues presented in lectures. (F) Piazza

251C. Causal Inference and Meta-Analysis in Epidemiology. (2) Two hours of lecture per week. Prerequisites: Students in the first semester of the second year of the epidemiology/biostatistics Master’s of Public Health program. (Students from other programs welcome). This course will cover the theoretical aspects of causal inference, literature review, and meta-analysis, and its focus will be more on the practical aspects of these topics that are not commonly found in textbooks or presented in classes on epidemiologic theory. It is hoped that the student develops the day-to-day skills necessary to present a well-written, documented, accurate, and thorough review of epidemiologic literature. (F) A. Smith, Steinman

252. Epidemiological Analysis. (3) Three hours of lecture per week. Prerequisites: 241B, 245, 250A, or consent of instructor. Advanced treatment of epidemiologic techniques. Discussion of bias and power, analysis of cohort data, spatial cluster data, and contingency tables; logistic regression; analysis of time-dependent data including life tables, Kaplan-Meier estimation, and proportional hazard models. Offered even-numbered years. (SP) Selvin

252A. Applied Sampling and Survey Design and Analysis. (3) Two hours of lecture and two hours of laboratory per week. This course will cover the basic principles of sampling and survey design. The weekly lecture and discussion sessions will 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 solve problems and for application to sampling problems. The material covered in the computer laboratory will generally correspond to the topics covered in the class meetings. Offered every 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: Consent of instructor. This course covers the basic tools required to critically read modeling papers and to develop and/or adapt computer models as research tools. (SP) Boyce, Satariano

252C. An Overview of the AIDS Epidemic. (3) Three hours of lecture per week. Prerequisites: Consent of instructor. The course will emphasize the current understanding of the risk behaviors and the transmission dynamics of the HIV epidemic. The dynamics of the transmission of HIV, prevention and intervention strategies, the ethical and social issues, and the development of behavioral science interventions. (F) Ekstrand

253A. Topics in Disease Surveillance. (2) Two hours of session per week. Prerequisites: Graduate standing or consent of instructor. Ways of doing surveillance for infectious and non-infectious diseases; how the results are obtained and their use for epidemiologic and public health decision making. (SP) Selvin

253B. Epidemiology and Control of Infectious Diseases. (3) Three hours of lecture/discussion per week. Prerequisites: Prior degree or courses in biomedical sciences and consent of instructor. A discussion of major infectious diseases with emphasis on data surveillance, surveillance, and prevention measures. Emphasis is on current problems in public health agencies at a state, national, and international level. (SP) Reingold, Vugia, Wendel

253C. An Overview of the Atherosclerotic Disease Epidemic. (3) Three hours of lecture per week. Prerequisites: Consent of instructor. The course will help students understand the current understanding approaches in genetic epidemiology are introduced, including Hardy-Weinberg equilibrium and linkage disequilibrium, genetic risk models, admixture, and methods for haplotype estimation. Evaluation of
single and multiple loci in the context of direct and indirect associations with human disease is also addressed. Linkage analysis to identify disease genes in different family structures will be introduced. Methods for genome and gene-environment interaction assessment are also presented. The lecture material will be supplemented with examples using real and simulated data and currently available software in a computer laboratory. Topics include the use of biological markers will be explored with the goal of illustrating both the power and limitations of biomarkers currently available for epidemiological research. Laboratory work and Internet demonstrations will provide hands-on experience with modern methods of molecular epidemiology. (F) Barcellos, Holland, Sensabaugh

257. Outbreak Investigation. (1,3) One hour of semina per week and field work outside class time. Prerequisites: Consent of instructor. This course will teach students what and why and how clusters of illnesses/epidemics are investigated. Methods and approaches required for such investigations will be discussed in detail, using published articles from the scientific literature to provide examples. Field work, to be conducted outside regular class hours, will involve the investigation of actual outbreaks and clusters in conjunction with nearby county health departments and under the supervision of the instructor. Students may opt to take the seminar component without the field work for 1 unit. (F,SP) Reingold

258. Epidemiology of Neoplastic Diseases. (3) Three hours of lecture per week. Prerequisites: Consent of instructor. This course will teach students the basics of epidemiology, biostatistics, and tumor biology. An introduction to the epidemiology of some major site-specific cancers, considering epidemiological approaches to the study of these diseases, and the practical aspects of the design and implementation will be discussed. (SP) Buffer

259B. Practical Applications of Epidemiologic Methods in Developing Countries. (3) Three hours of lecture per week. Practical application of epidemiologic methods in developing countries; including surveillance, surveys, case-control studies, and intervention trials. The applications of these methods to the study of infectious and non-infectious disease problems common in developing countries will be presented. (F) 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 humans and the environment, and disease. Course themes are developed using examples of viral, bacterial, and parasitological pathogens that exemplify mechanisms of infectious disease. The epidemiology, pathogenesis, diagnosis, treatment, prevention, and control will be presented for each infectious disease discussed. (F,SP)

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 one-half weeks. Students may take a single module for 2 units. Prerequisites: 260A or consent of instructor. Module 1: Practice in standard techniques for the isolation, identification, and characterization of infectious agents; laboratory safety. Module 2: Application of molecular methods to the identification and characterization of infectious agents, vectors, and hosts. (SP) Loretz, Sensabaugh

260E. Molecular Epidemiology of Infectious Diseases. (3) Two hours of lecture and one-half hour of discussion per week. Prerequisites: 150A. The course will cover general principles and practical approaches in the use of molecular laboratory techniques to address specific epidemiologic problems. It is designed for students with experience in the laboratory or in epidemiology, but not both. The principles to be discussed will include the use of molecular techniques in outbreak investigations, characterization of dynamics of disease transmission, identifying vehicles, and quantifying attributable risk in sporadic infections, refining data stratification to assist case-control studies, distinguishing pathogens from non-pathogens, and genetic determinants of disease transmission. 3-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 an appreciation and understanding of the complex issues involved in conducting scientific, laboratory-based research in developing countries. We will discuss the many obstacles to establishing and sustaining research projects, such as poor infrastructure, restricted networks, and lack of scientific information and interaction. More importantly, we will identify innovative solutions to overcoming these obstacles. 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/discussion per week. Prerequisites: Consent of instructor. This course will cover basic principles of viral infection and host responses to virally caused diseases. The emphasis will be on viral diseases of medical importance. Four units of credit given to doctoral students who write a research proposal on a topic other than that proposed for their dissertation. An overview of current and emerging viruses will be provided with presentation of current investigations. (SP) Buffler, McKone, Spear

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 for graduate students will explore the molecular and cellular basis of bacterial pathogenesis. The emphasis will be on model bacterial pathogens of mammals. The course will also include some aspects of bacterial genetics and physiology, immune response to infection, and the cell biology of host-parasite interactions. Topics Taught concurrently with. Students enrolled in 262 also will be 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) One hour of lecture and one hour of discussion per week. Prerequisites: Second-year Infectious Diseases MPH students only. Formerly 264A-264B. Examination 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) Sensabaugh

265. Molecular Parasitology. (3) Course may be repeated for credit if three hours of discussion and four 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 following areas will be covered: biology; disease spectrum; epidemiology; infection; immunology; and vaccine development. The lectures will focus on “state-of-the-art” in research in relation to molecular mechanisms of pathogenesis, parasite adaptations for survival within hosts, resistance 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 one hour of discussion of assigned readings. This course addresses the molecular virology or microbiology. Topics include the molecular biology of tumor viruses; mechanisms of viral carcinogenesis; in vitro vs. in vivo characteristics of transformed cells; the epidemiology, pathology, diagnosis, treatment, and prevention of virally caused cancers; problems of proving the etiology of virally caused cancers. A term paper or grant proposal is required. Offered even-numbered years. (SP) Bushing

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 of foodborne diseases. Topics will be covered: 1) categories, clinical manifestations, and disease processes of foodborne illnesses; 2) etiological agents causing foodborne illness; 3) investigation and control of foodborne illness. The course will address different types of foodborne diseases, clinical manifestations, and the interactions between etiological agents (pathogens and non-pathogens) and human factors. Central limiting factors are frequently associated with foodborne illness including bacterial and viral pathogens such as Salmonella, E coli, hepatitis virus and Norwalk-like gastroenteritis viruses. The course will also study non-communicable pathogens 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 minimize risk to the public including 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

267A. Engineering Control of Airborne Chemicals. (F) Three hours of lecture per week. Prerequisites: Graduate standing in environmental health sciences or consent of instructor. Principles of hazard evaluation and control of airborne chemicals in industry that have an impact on the occupational environment. Topics include airborne contaminants, air pollution, uptake by different organs, and biological pathways. Regulations and standards. Occupational health, microbiological, social, and economical 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 per week. Prerequisites: Graduate standing in environmental health sciences or consent of instructor. Principles of hazard evaluation and control of airborne chemicals in industry that have an impact on the occupational environment. Topics include airborne contaminants, uptake by different organs, and biological pathways. Regulations and standards. Occupational health, microbiological, social, and economical issues involved in the food production, distribution, and consumption that contribute to foodborne diseases. (SP) Hammond

268A. Physical Agents: Health Assessment and Control. (3) Three hours of lecture per week. Prerequisites: Consent of instructor. Radiation, noise, vibration, and thermal stress as community and occupational hazards, including exposure assessment, exposure-risk relationships, and control strategies. Offered alternate years. (F,SP) Harris

268B. Case Studies in Industrial Hygiene. (2) Two hours of lecture/discussion per week. Must be taken on a satisfactory/unsatisfactory basis. Prerequisites: Consent of instructor. Provides an overview of the industrial health field, health compensation, indoor air quality and respiratory protection, hearing conservation, ergonomics, bioaerosols, radiation, blood-borne pathogens, and OSHA guidelines. (SP) Robinson

268C. Industrial Hygiene: Professional Practices. (3) Six hours of lecture/laboratory 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 hygiene management personnel. Introduces students to the occupational environment of selected industries. (SP) Plog

269A. Principles of Occupational and Environmental Diseases. (3) Three hours of lecture/discussion per week. An overview of the major occupational and environmental diseases including pulmonary, dermatologic, musculoskeletal, neoplastic, and neurologic. Specific disease-causing agents (solvents, metals, pesticides, and others) will be discussed. The course will cover disease pathogenesis, manifestations, and control. This course class does not require previous medical/clinical background. (F) Harrison, Seward

269B. Occupational Safety. (2) Must be taken on a letter-grade basis. Two hours of lecture per week. Presents an overview of and introduction to the occupational safety function including a discussion of the var-
269C. Occupational Biomechanics. (4) Three hours of lecture/discussion per week. Overview of ergonomics and occupational biomechanics. Course covers pathophysiology and risk factors of upper extremity and back musculoskeletal disorders, biomechanics of spine and upper extremity loading at work, measurement of force and posture, models for risk assessment, anthropometry applied to task and workstation design, tool design, and structure of successful ergonomics programs. Students will conduct a detailed job analysis and design a workplace intervention. (SP) Rempel

269D. Ergonomics Seminar. (2) Two hours of lecture per week. Prerequisites: 269C or consent of 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

270A. Exposure Assessment and Control. (3) Three hours of lecture per week. Prerequisites: Graduate standing or consent of instructor. Direct and indirect methods and procedures for the 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 and dose metrics, stochastic and deterministic 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, Spear

270B. Toxicology I. (3) Three hours of lecture per week. Prerequisites: Graduate standing or consent of instructor. Introduction to toxicology covering basic principles of toxicology, toxicity testing, chemical metabolism, mechanisms of toxicity, carcinogenesis, interpretation of toxicological data for risk assessment, and target organ toxicity. Also listed as Nutritional Science and Toxicology C219. (F) M. Smith

270C. Advanced Pharmacology and Toxicology. (2) Two hours of lecture/discussion per week. Prerequisites: 270A, 270B. Recommended, or consent of instructor. The purpose of this course is to teach the skills of quantitative risk assessment by means of lectures and a group risk assessment project. A number of topics are covered in risk assessment including fields such as toxicology, epidemiology, biochemistry, molecular biology, exposure analysis, environmental chemistry, pathogenesis, medicine, public health, and endocrinology. This course will help students to understand the scientific basis of risk assessment, and how to use risk assessment tools effectively in a variety of contexts. (SP) Weil

270E. Quantitative Risk Assessment. (3) Three hours of lecture per week. Prerequisites: 250A, 270A, 270B. Recommended, or consent of instructor. The purpose of this course is to teach the skills of quantitative risk assessment by means of lectures and a group risk assessment project. A number of topics are covered in risk assessment including fields such as toxicology, epidemiology, biochemistry, molecular biology, exposure analysis, environmental chemistry, pathogenesis, medicine, public health, and endocrinology. This course will help students to understand the scientific basis of risk assessment, and how to use risk assessment tools effectively in a variety of contexts. (SP) Weil

271B. Reproductive Hazards of Industrial Chemicals. (3) Three hours of lecture/discussion per week. Prerequisites: Graduate standing or consent of instructor. The scientific knowledge necessary to assess the hazards of chemical exposure to human male and female reproduction. Includes the effects of exposures to various classes of chemicals, and the role of reproductive exposure, e.g., radiation, are not discussed. (SP) Eisenkraft, A. Smith

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 homework assignments will be greatly facilitated by use of computer spreadsheets. (F) K. Smith

271E. Policy for Health and Environment. (3) Three hours of lecture per week. Prerequisites: Graduate standing or consent of instructor. The course introduces students to the technical, administrative, and political elements that contribute to environmental health policy in the U.S. and how their interplay shapes policy decisions. The course covers major approaches to defining environmental contaminants; technical methods used in policy analysis including risk assessment, cost-benefit analysis, and technology-related review; the role of legislative and administrative institutions; and the role of interests and political actors in policy debates, particularly those with technical components. The course will also examine emerging approaches to assessment of environmental health and toxicological hazards, including the use of polynomial principles and environmental justice, comparing these to the currently predominant environmental management paradigm. (SP) Kyle

274. Geographic Information Systems and Remote Sensing in Public Health. (3) Three hours of lecture/laboratory per week. Prerequisites: 250A, 250B, 250C recommended. The course will introduce students to the methods used to analyze geographic information and will cover the use of GIS and RS tools and methods. (SP) Selt

275. Current Topics in Vaccinology. (2) Two hours of lecture per week. Prerequisites: 260A; basic immunology course is recommended. This is an advanced infectious disease course designed to cover issues related to the biological aspects of vaccinology. It will begin with discussions related to the concepts of correlates of protection, new understanding of cell-mediated and humoral immune responses, and viral immunology. Then the course will address topics related to the latest developments in recombinant vaccine 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. Each session will begin with a didactic lecture on topics outlined in the syllabus. This will be followed by 10-15 minute discussion session based on published research. Students are required to prepare for the discussion at each session. A satisfactory letter grade or a 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: Consent of instructor. This course presents an analysis of the core issues responsible for the erosion and ethical conduct of research. Prerequisites: Graduate standing. Students interested in research, conducting research, and teaching research methods or courses are welcome. This course will focus on the ethical and regulatory structures, definitions of misconduct and process of misconduct investigations will be presented. (F) Stephens

280A-280B. Clinical Aspects of Human Genetics. (3,3) Three hours of lecture per week. Prerequisites: Consent of Instructor. The clinical delineation of human genetic diseases, including chromosomal abnormalities and polygenic disorders. Genetic diagnoses, clinical management, and developmental aspects of disease. (SP) Ho

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 lecture per week. Prerequisites: Consent of instructor. A series of lectures and seminars providing detailed coverage of selected topics in the history of medicine and public health. The precise content will vary from year to year. Themes in the medical and selected ancillary sciences will also be addressed. To take the course for 3 units will be assigned a research topic. (SP) Hook

285. 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: Civil and Environmental Engineering 262 or equivalent. This course applies principles of engineering, behavioral science, and vision science to preventing traffic collisions and subsequent injury. A systematic approach to traffic safety will be presented in the course, and will include (1) human behavior, vehicle design, and roadway design as interacting approaches to preventing traffic crashes and (2) vehicle and roadway designs to preventing injury once a collision has occurred. Implications of intelligent transportation system concepts for traffic safety will be discussed throughout the course. Also listed as Civil and Environmental Engineering C265. (SP) Ragland

285A. 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 principles of injury prevention and control, which to consider injuries (both intentional and unintentional) as social, and public health problems. Through review of epidemiology and intervention studies, injury prevention methods will be presented. Course work will consist of a critical review of the scientific literature on alternative strategies for injury prevention and control aggregate. A report will be prepared on the scientific literature on alternative strategies for injury prevention and control. (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, but is also open to 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 Pre-
ventive Medicine examination in public health and general preventive medicine. The objectives of this seminar are to review basic principles and practices of public health care organizations. (SP) 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 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 preventive medicine. The objectives of this seminar are to review basic principles and practices of public health care organization and financing, quality assurance, clinical practice guidelines, clinical preventive services and health care delivery for the underserved and to describe the role of the preventive medicine physician in health care organizations. (SP) Rutherford, Seward

288D. 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, but is also open to 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 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) Course may be repeated for credit. One to four hours of seminar per week. A discussion of current developments and issues in public health of interest to faculty and students of the department as a whole. Content varies from semester to semester depending upon current issues and interests. (F,SP) Seward

291A. Preparation for Public Health Practice. (1) Two hours of seminar every other week. Must be taken on a satisfactory/unsatisfactory basis. Formerly 291. A series of skills-based workshops designed to introduce the student to specialized skills needed in the public health practice setting. These workshops are designed to complement the core curriculum of the School of Public Health and are selected based on regular feedback from faculty, public health practitioners, and other public health consultants. This seminar is required for all M.P.H. and D.Ph. students. The student selects from a list of 1-2 pairs of workshops to total 1 unit equal to 15 hours of class time, plus readings that are assigned for many of the workshops. Workshop topics include written work for publication, for the media, or for policymakers (three separate workshops); management styles; cost-effectiveness and cost-benefit analysis techniques; oral presentations; diversity in the workplace; negotiation and conflict resolution; tools for financial planning and budgeting, using Powerpoint; strategic planning; and legislation in action. (SP) Staff

291B. Public Health Internship Preparation Seminar. (1) Two hours of seminar every other week. Must be taken on a satisfactory/unsatisfactory basis. Seminar providing area of concentration-specific preparation for M.P.H. students interested in public health practice. Emphasis on integrative activities with second-year students and completion of prerequisites for N297. (F) Staff

292. Seminars for M.P.H. Students. (1-4) Course may be repeated for credit. One to four hours of seminar per week. Sections 1-8 to be graded on a letter-grade basis. Sections 9-16 to be graded on a pass/fail basis. Discussion and analysis of dissertation research projects, as well as of conceptual and methodological problems in planning and conducting health research. (F,SP) Staff

293. 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 experience in the student’s chosen public health discipline. Emphasis on integration of concepts and skills as this furthers each 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) Must be taken on a satisfactory/unsatisfactory basis. Supervised experience relevant to specific aspects of public health in off-campus organizations for graduate students. Requires individual meetings with faculty sponsor and written reports required. (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. Requires individual meetings with faculty sponsor and written reports required. (F,SP) Staff

298. Group Study. (1-8) Course may be repeated for credit. Independent study. Sections 1-30 to be graded on a satisfactory/unsatisfactory basis. Sections 9-16 to be graded on a pass/fail basis. Independent study and research project. (F,SP) Staff

299. Independent Research. (1-12) Course may be repeated for credit. Sections 1-8 to be graded on a letter-grade basis. Sections 9-16 to be graded on a pass/fail 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 techniques in teaching biostatistics as applied to public health topics. (F,SP) Saffi

333. School of Public Health Schoolwide Pedagogy Course. (2) Course may be repeated for credit. Two hours of session per week. Must be taken on a satisfactory/unsatisfactory basis. Skill development and professional development for instructors in public health classes. Preparing for and leading discussions, designing writing prompts, preparing and creating problem sets. Working with students one-on-one. Grading students’ writing and exams. Self-assessment. Developing a course syllabus. Use of technology in public health classes. Required for first-time public health GSIs who are not participating in an SPH divisional pedagogy course. (F,SP) 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. Interdisciplinary seminars 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 different topic will be presented. Invited speakers with special expertise in these areas will participate. Sponsoring departments: Molecular and Cellular Biology, Optometry, Public Health, and Social Welfare. (F,SP) Timiras

IDS 130. Seminar on Social, Political, and Ethical Issues in Health and Medicine. (2) One hour of lecture and one hour of discussion per week. Must be taken on a passed/not passed basis. An interdisciplinary approach to health and medicine. Guest lecturers will complement the core curriculum of the seminar. Guest lecturers will discuss and present analyses of the reading materials as well as issues raised by the speakers. Sponsoring departments: Public Health and Education. (F) Duhl

Public Policy

(Richard & Rhoda Goldman School of Public Policy)


Professors

Eugene Bardach, Ph.D. University of California, Berkeley. Regulation, implementation, social theory. Robert Beardsley, Ph.D. University of Minnesota, History, higher education

Henry E. Brady, Ph.D. University of Chicago. Quantitative methodology. American and Canadian politics, political behavior

H. Alain de Janany, Ph.D. University of California, Berkeley. International rural economic development

John W. Elwood, Ph.D. Johns Hopkins University. Policy process, public budgeting, organizational behavior

Henry S. Friedman, Ph.D. Yale University. Applied 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. Sponsoring departments: Public Health and Education. (F) Duhl

Jane Mauldon, Ph.D. Princeton University. Health policy and public health. (F,SP) Duhl

Steve Raphael, Ph.D. University of California, Berkeley. Expenditure decisions in public finance, cost-benefit analysis, welfare economics

Eugene Smolensky, Ph.D. University of Pennsylvania. Public health research. (F,SP) Duhl

†David L. Kirp, LL.B. Harvard University. Law, politics, education, gender

Robert E. MacCoun, Ph.D. Michigan State University. Social psychology, judgment and decision making, civil and criminal justice

Michael Nachtm (Dean), 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 H. McIvor, Ph.D. Harvard University. Microeconomics, public finance

Richard Scheffler, Ph.D. New York University. Health economics, health policy, nonprofit organizations

Suzanne Scotchmer, 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 (George Quest Chair in Business Ethics), Ph.D. University of British Columbia. Business government relations, American and comparative

David Gardner (Emeritus), Ph.D. C. Bartlett McGuire (Emeritus), M.A., Arnold J. Meitner (Emeritus), Ph.D., S. Sender (Emeritus)

Percy H. Tannenbaum (Emeritus), Ph.D. Martin A. Trow (Emeritus), Ph.D.

Associate Professors

Jane Mauldon, Ph.D. Princeton University. Health policy and economics, urban planning, demography

Steve Raphael, Ph.D. University of California, Berkeley. Urban and labor policy, economics of racial inequality

Assistant Professors

Sergio R. Cifuentes, 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. Current topics in hate crime

Rucker Johnson, Ph.D. University of Michigan, Ann Arbor. Social policy...
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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 characteristics demand sophisticated multidisciplinary approaches to identify 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 diverse offerings 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 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 provides students from other departments in the university and in the community with a working knowledge of public policy and its implementation. Students who complete the minor receive a certificate of completion on graduation. Completion of this program provides a basis for employment in policy analysis, public administration, political and organizational analysis, economics, and law.

Affiliated Faculty

Martin Landau (Emeritus, Political Science), Ph.D. New York University

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. Students in the master 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 policy 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 at least 20 courses in 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.

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, 2657 Hearst Avenue #7320, Berkeley, CA 94720-7320.

Lower Division Courses

1. Public Policy in California. (4) Three hours of lecture and one hour of discussion per week. Prerequisites: Economics C142 and Political Science C131A. Three hours of lecture per week.

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, among others. (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 interpretive techniques 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) Kirp

156. Program and Policy Design. (4) Three hours of lecture per week. Studio/laboratory in the design of nonphysical environments. Complements courses in policy analysis, public policy, 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, programs and programs for 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. Studio/laboratory in the design of nonphysical environments. Complements courses in policy analysis, public policy, 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, programs and programs for the public sector, including statutes, regulations, and implementation projects. Comparative reviews will feature invited guests. Undergraduate level of 256. (SP) O’Hare

*Professor of the Graduate School R prefix=course satisfies R & C requirement A suffix=course satisfies American cultures requirement T prefix=course satisfies Cross-listed course C prefix=course satisfies R & C requirement H prefix=honors course
economic roles of participants in the arts. Readings, field trips, and case discussion. One paper in two hours of seminar per week. (SP) 

210A-210B. The Economics of Public Policy Analysis. (4,4) Three hours of lecture/discussion and one hour of discussion 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 actions in terms of 1) the efficiency of resource allocation and 2) equity is stressed. Policy areas are selected to show a broad range of actual applications of the theories 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. Focuses on legal aspects of public policy by exposing students to primary legal materials, including court decisions and legislative and administrative regulations. Skills of interpretation and legal draftsmanship are developed. Relationships among law-making agencies and between law and policy are explored through case-centered studies. (Kirk) 

230A-230B. Political and Agency Management Aspects of Public Policy. (4,4) Four hours of lecture/discussion per week. Prerequisites: Open only to students in the Graduate School of Public Policy. This course examines the political and organizational factors involved in developing new policies, choosing among alternatives, gaining acceptance, assuring implementation, and coping with unanticipated consequences. Materials will include case studies, theoretical, empirical, and interpretive works from several disciplines. (Kirk) 

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 analyses 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 microeconomic policy analyses based on microeconomic theories of organization, including collective demand mechanisms, behavioral theory of regulatory agencies and natural monopolies, 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, economic, 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 Janvry, Sadoulet, Zilibzer 

256. Program and Policy Design. (4) Three hours of seminar per week. Formerly 207. Emphasizes the design of non-environmental projects. 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, programs and policies that create value in the public sector, including statutes, regulations, and implementation projects. Comparative reviews are based on the values in policy toward the arts (especially direct subsidy, copyright and regulation, and indirect assistance) and its effects on artists, audiences, and institutions. Emphasizes “highbrow” arts, U.S. policy, and the social and economic roles of participants in the arts. Readings, field trips, and case discussion. One paper in two hours of seminar per week. (SP) O'Hare 

257. Arts and Cultural Policy. (4) Three hours of lecture per week. Formerly 208. Survey of government policy toward the arts (especially direct subsidy, copyright and regulation, and indirect assistance) and its effects on artists, audiences, and institutions. Emphasizes “highbrow” arts, U.S. policy, and the social and economic roles of participants in the arts. Readings, field trips, and case discussion. One paper in two hours of seminar per week. (SP) O'Hare 

259. Cost-Benefit Analysis. (3) Three hours of seminar per week. Prerequisites: Calculus and Intermediate Microeconomics or consent of instructor. This course discusses and criticizes the conceptual foundations of cost-benefit analysis, and analyzes in depth some important applied aspects such as endogenous prices of other commodities, methods to infer willingness to pay, valuation of life, uncertainty and the rate of discount. (F) 

261. Reforming Education for the Next Generation. (4) Three hours of seminar per week. Prerequisites: Consent of instructor. While education policy has been reshaped in the past generation, certain themes persist—equalizing opportunity, providing more choice (for families and cultures), promoting excellence. This seminar explores these central themes, then analyzes current reform strategies, including vouchers, for-profit management of public schools, outcome equalization, and systemic reform of instruction— to implement them. (F) Kirk 

264. Striving for Excellence in Public Management. (3) Three hours of seminar per week. Using case materials, students assume the roles of managers trying to improve performance in their areas. Cases are drawn from a variety of policy areas, but emphasize public health, education, social services, and land use. Middle and top management roles are emphasized. (F) Bardisch
265. Policies for Youth. (3) Three hours of seminar per week. Prerequisites: Consent of instructor. This seminar deals with the transition between youth and adulthood in advanced industrial societies. The seminar will consider some of the problems associated with this transition and efforts that are being made or might be made by public and private agencies to deal with these problems in the US and abroad. (SP) Mauldon

267. Evaluating Welfare, Health, and Education Programs. (3) Three hours of seminar per week. Prerequisites: Course in inferential statistics or consent of instructor. This course is for students who want to study the broad principles and the nitty-gritty practical problems of program evaluation. Topics will include the use of evaluation “weekly reports,” analyses of evaluation “prospective” evaluations, data sources and diverse data collection methods; uses of administrative data in evaluation; sampling, sample sizes, power analysis; common statistical tests used in evaluations; analyzing the strengths and weaknesses of published evaluations; methods of measuring program costs; ethical issues in evaluations. (SP) Mauldon

269. Public Budgeting. (4) Three hours of lecture/discussion per week. Formerly 209. Public sector budgeting is an activity that incorporates, many, perhaps most, of the skills of the public manager and analyst. The goal of this course is to develop and hone these skills. Using cases and readings from all levels of American government, the course will allow the student to gain an understanding of the problems of consequences of public sector budgeting, its processes and participants, and the potential impacts of various reforms. Graduate level of Public Policy 179. (F) Ellwood

272. Health Care Policy. (3) Three hours of lecture and one hour of discussion per week. Examines the structure, conduct, and performance of the U.S. health care system. Course is a vehicle for considering problems that arise in the design and implementation of health care policy specifically, and public policy generally. The course uses the tools of many disciplines, but particularly those of economics and ethics, to analyze various components of health care issues, and to weigh the associated regulatory proposals. The focus is on the U.S. system, but international comparisons will also be explored. (F) Staff

C274. Public Sector Microeconomics. (3) Two hours of lecture per week. The economic and policy analysis of government expenditures, taxes, and intergovernmental fiscal relations. Also listed as Economics C230C. (F,S,P) Quigley

C275. Housing and the Urban Economy. (3) Three hours of seminar per week. Prerequisites: 210A-210B or equivalent. This course considers 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. Also listed as City and Regional Planning C234. (F) Quigley

278. Psychology and Public Policy. (3) Three hours of lecture per week. This course surveys contributions to public policy from psychology. The objectives of the course are (a) to make you an informed consumer of behavioral science research—enthusiastic yet critical, (b) to understand how and what psychological behavior can be predicted, understood, and/or influenced, and (c) to understand the psychological processes that influence judgment by policymakers and policy analysts. (F) MacCoun

279. Research Design and Data Collection for Public Policy. (4) Three hours of seminar per week. Prerequisites: At least one semester of statistics. Public policy analysis requires a sophisticated understanding of a variety of types of data. Empirical arguments and counterarguments play a central role in policy debates. Quantitative analysis courses teach you how to analyze data; this course will introduce you to the design of data collection and principles for critically evaluating data collected by others. Topics include measurement reliability and validity, questionnaire design, sampling, experimental and quasi-experimental program evaluation designs, qualitative research methods, and the politics of data in public policy. (SP) MacCoun

Range Management

Range Management (College of Natural Resources, Interdepartmental Graduate Groups)

Office: 133 Mulford Hall, (510) 642-6410
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 entomology, biological control (Environmental Science, Policy, and Management)
William E. Dietrich, Ph.D. Hillslope and fluvial geomorphodynamics (Environmental Science, Policy, and Management)
Mary K. Firestone, Ph.D. Soil microbiology, nutrient cycling (Environmental Science, Policy, and Management)
Louise P. Fortmann, Ph.D. Natural resource sociology (Environmental Science, Policy, and Management)
T.J. McBride, Ph.D. Forest ecology (Environmental Science, Policy, and Management)
Dale R. McCullough, Ph.D. Forest epidemiology and management (Environmental Science, Policy, and Management)
Jeffrey M. Romm, Ph.D. Natural resource sociology (Environmental Science, Policy, and Management)
Wilford R. Gardner (Emeritus), Ph.D. Soil physics, soil biophysics (Environmental Science, Policy, and Management)
Harold F. Head (Emeritus), Ph.D. Range 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 E. Martin (Emeritus), Ph.D. Wildlife biology 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. Ecology, conservation biology (Integrative Biology)
Lynn Hunting, Ph.D. Forest ecology and conservation (Environmental Science, Policy, and Management)
John D. Radke, Ph.D. Geographical information systems in land management planning (Landscape Architecture and Environmental Planning)

Associate Adjunct Professor
Adina M. Merenlender, Ph.D. Ecology, conservation biology, landscape ecology using GIS (Environmental Science, Policy, and Management)

Specialist
Richard B. Standford, Ph.D. Wildlife ecology and management (Environmental Science, Policy, and Management)

Graduate Adviser: Ms. Allen-Diaz.

Program Overview

The graduate program in range management is administered by an interdepartmental group of faculty members from the Department of Environmental Science, Policy, and Management and related departments at Berkeley. The program prepares students with a bachelor’s degree in resource management 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 specialization include grassland, savanna, and shrubland ecology, rangeland rehabilitation, wetland ecology, and rangeland policy. Excellent laboratory and field facilities are available for student research. These include several experimental range properties and large rangeland ranges easily accessible from Berkeley. The faculty are actively engaged in both theoretical and practical research.
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), Geology 107 (Geography of Religions), Sociology 112 (Sociology of Religion), 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 165 (Myth and Religion in the Medieval World) or 115 (Mysticism and Myths of Ancient Greece), Religious Studies 120 (The Mystical Tradition in Literature) or 190 (Topics in the Study of Religion) when topic is thematic.

Three courses in one of the fields of emphasis (see below).

Additional religion courses to make a total of at least 30 upper division units. The selection of these courses must be approved in writing by a major adviser (see the religious studies student affairs officer at the beginning of each semester for a current list of courses on 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 religion in ancient or 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 Persian.

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 should consult their 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 of approved majors. Students must complete a 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 of approved majors. Students must complete a 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 of approved majors. Students must complete a 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 of approved majors. Students must complete a 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 of approved majors. Students must complete a 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 of approved majors. Students must complete a 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 of approved majors. Students must complete a 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 of approved majors. Students must complete a 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 of approved majors. Students must complete a 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 of approved majors. Students must complete a 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 of approved majors.

Hors 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 work in a language relevant to the student’s academic program (with consent of adviser) and the submission of a bachelor’s thesis as culmination of one or two terms of the sequence. Religious Studies H195A-H195B. 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 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 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. 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 fifteen freshmen. (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 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 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 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)

90A-90B. Introductory Topics in Religious Studies. (4,4) Three hours of lecture per week. Selected introductory topics in the study of religion. (F,SP) Staff

Upper Division Courses

C103. Religion of Ancient Egypt. (3) Three hours of lecture per week. Prerequisites: 18 or consent of instructor. A survey of the religious beliefs of the ancient Egyptians, based primarily upon the written sources. Also listed as Near Eastern Studies C103.

C104. Babylonian Religion. (3) Three hours of lecture per week. A survey of Babylonian religious beliefs and practices based on indigenous texts and monuments. Also listed as Near Eastern Studies C104.

C108. Scandinavian Myth and Religion. (4) Three hours of lecture per week. Religious beliefs and practices among the Vikings in the Viking Age in the literature and the history of literature and the history of literature and the history of literature and the history of literature. Also listed as Scandinavian C160. (F,SP) Staff

C109. Celtic Mythology and Oral Tradition. (4) Three hours of lecture per week. The course will introduce students to the pre-Christian beliefs 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 Celtic Studies C168. Staff

C111. 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 mythic, symbolic, and allegorical language as the bearer of persuasive intention. Also listed as Rhetoric C131. (F,SP) Staff

115. Mysticism. (4) Three hours of lecture and one hour of discussion per week. Studies in the literature and piety of various mystical traditions, including readings in scripture, lyrical poetry, spiritual autobiography, etc. The relationship of several forms of mysticism to their religious traditions will be treated. Staff

C118. 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 mythical 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 society from the Middle Ages to modernity. Also listed as Armenian C113. (F,SP) Largier
C119. The English Bible As Literature. (4) Three hours of lecture per week. Formerly 119. Introduction to the English Bible treated as a literary work. Also listed as English C107.

120A. Origins of Christianity. (4) Three hours of lecture and one hour of discussion per week. Prerequisites: 90A or 90B, History 4 or consent of instructor. Varieties of early Christianity. Conflicts of interpretation of both Old Testament and Christian message; Marcion; the Gnostics; virginity; martyrdom; radical prophecy; the idea of heresy. Elm
C124. The Renaissance and the Reformation. (4) Three hours of lecture and two hours of seminar per week. Prerequisites: 90A or 90B, History 4 or consent of instructor. The nature of medieval culture, the religious upheavals of the sixteenth century. Also listed as History C157. (F,SP)

130. Introduction to Judaism. (4) Three hours of lecture and one hour of discussion per week. Prerequisites: 90A or 90B or consent of instructor. The nature of Jewish culture, major religious movements, and the practice of Judaism in modern South India. Also listed as South Asian C141. G. Hart

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) Goldman

171AC. Religious Pluralism in America. (4) Three hours of lecture and one hour of discussion per week. This course examines the diversity of American religious traditions as seen through the experiences of African, Arab, and Asian immigrant communities. Since ethnic and racial issues of race play a defining role in the development of these religious communities, the theoretical focus of this course will center on the tensions such issues of racial and cultural difference created, the ways these communities addressed their cultural alienation, and the means they used to ease such tensions. Special attention will be given to the ways these communities sought to preserve traditional beliefs and practices in the face of trends toward cultural assimilation. This course satisfies the American cultures requirement. Staff
Major Program

Undergraduates may concentrate in one of the following areas: A) history and theory of rhetoric, B) public discourse, and C) narrative and image. Majors must take the following core requirements: Rhetoric 10 and 20 in the lower division, Rhetoric 103A and 103B in the upper division plus five additional upper division courses in Rhetoric—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 successfully. No course taken Pass/No Pass 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 will constitute enable close study of the process 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, 110M, 132, 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, concepts, vocabularies, and genres in a variety of cultures and historical epochs. Courses in this area include 131, 141AC, 150, 152, 152A, 155, 157A, 157B, 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 figure and image in the representation of reality. Students consider the production and reception of narrative literature—oral, epic, folktales, lyrical poetry—and film, in an attempt to understand the boundaries 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, 128, 129, 133, 134, 135, 139, 139AC, 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 assistant in 7404 Dwelle Hall. 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 rhetoric and a 3.5 overall Berkeley GPA to graduate with the degree in rhetoric with honors. Rhetoric H190A-H190B. Students work under the supervision of a selected rhetoric faculty member. Four units of credit (2 units each semester) 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 complete the 4-unit course with a letter grade of A or better and maintain the required 3.7 overall Berkeley GPA may receive the B.A. with Honors major.

Seniors eligible to enroll in the honors program must begin arrangements with the faculty member who is willing to direct their honors thesis in the semester before they enroll in H190A. See the undergraduate assistant for honors information and an application. Warning: Graduating honors candidates who complete the major requirements but take an incomplete in the H190A-H190B series must drop themselves from the degree list or honor’s degree will appear on their official transcripts or diplomas.

Minor Program

The goal of the minor in rhetoric is to introduce students to the methodological procedures and interdisciplinary approach of a field that examines all disciplines from the outside and poses such questions as: how is philosophy (or law, or literature, or science) constituted and its kinds of discourses are considered legitimate within this field? And what kinds of knowledge are produced 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 discourse; literary and cultural discourse; theoretical inquiry into law, politics, and society; rhetoric and theories of film, as well as experience in a comprehensive overview 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 arguments of such fields as law, politics, literature, film, and philosophy. The interests of faculty and graduate students have ranged throughout these fields and are informed by 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, which at least five must be graduate courses in 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 matters before 1800. Because of the department’s commitment to interdisciplinary research, graduate students are encouraged at every stage of their careers to work
Note: Check with department for exact course offerings during the year.

R1A. The Craft of Writing. (4) Three hours of lecture per week. Prerequisites: 1A or equivalent. Formerly 1A. Rhetorical approach to reading and writing argumentative discourse. Close reading of selected texts; written themes developed from class discussion and analysis of rhetorical strategies. Satisfies the first half of the Reading and Composition requirement. (F,SP) Staff

R1B. The Craft of Writing. (3) Three hours of lecture per week. Prerequisites: 1A or equivalent. Formerly 1A. This course follows the argumentative writing dramaturgy of 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 in- clude, definition, the syllogism, the enthymeme, falla- cies, as well as various non-logical appeals. Also, the course will treat introductory fashion some ancient and modern attempts to relate rhetoric and logic. (F,SP) Staff

20. Rhetorical Interpretation. (4) Three hours of lect- ure and one hour of discussion per week. Introduction to the study of rhetorical interpretation, treating how the actions of tropes, figures, and performance generates meaning in communication: from fiction and other forms of literature, to politics, to film, and visual and ma- terial culture generally. (F,SP) Staff

24. Freshman Seminars. (1) Course may be repeated for credit. Three hours of seminar per week. One hour of seminars 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 de- signed to offer 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 depart- ment to department and semester to semester. Staff

30. Rhetorical Theory and Oral Argument. (4) Three hours of lecture/discussion per week. Prerequisites: 10 or permission of instructor. Examination of basic prin- ciples of rhetoric and strategies of argumentation, with practice in oral argument. (F,SP) Staff

39. Freshman/Sophomore Seminar. Course may be repeated for credit as topic varies. One and one-half 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. The Berkeley Seminar Program has been de- signed to offer 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 depart- ment to department and semester to semester. Staff

40A.C. Rhetoric of Film in American Cultures. (4) Course may be repeated for credit. Three hours of lec- ture 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 and anxieties. This 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 focuses on the rhetorical construction of Ameri- can cultural identities among African American, Native American, Asian American, Latinx, and Euro- pean American oral and written traditions, the course will explore what it means to be “American.” The course will analyze and compare specific perfor-

mances of identity and consider how these perform- ing practices 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 experiments in the interactions between new media and perceptions/performance of embodiment, agency, citizenship, collective action, individual iden- tity, time and space. Topics focus on race, ethnicity, gender, and disability in the U.S. and how the new media reinforce social hierarchies yet offer pos- sibilities of transcendence. New media can divide and disenfranchise, but also liberate in unexpected ways. This course explores these strands and the links between them. This course satisfies the American cul- tures requirement. (F,SP) 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 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 of- fered by faculty members across the campus. Sophomore seminars offer opportunity for close, regular intellectual contact between faculty mem- bers and students in the crucial second year. The topics vary from semester to semester. Enrollment limited to 15 sopho- mores. (F,SP) Staff

98. 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 passed/not passed basis. Prerequisites: Consent of ad- ministration for a small group of students on a topic initi- ated by those students. (F,SP) Staff

Upper Division Courses

Note: Because there have been changes to major and minor requirements, please check with the de- partment for any changes in prerequisites of rhetoric courses or curriculum.

103A. Approaches and Paradigms in the History of Rhetorical Theory. (4) Three hours of lecture per week. Prerequisites: Consent of instructor. Formerly 100. A broad consideration of the historical re- lationships between rhetoric, philosophy, literature, and rhetoric with special emphasis on the historical re- lationships of the classical and medieval periods. (F,SP) Staff

103B. Approaches and Paradigms in the History of Rhetorical Theory II. (4) Three hours of lecture per week. Prerequisites: 10 or consent of instructor. Formerly 101. A broad consideration of the historical re- lationship between philosophy, literature, and rhetoric, with special emphasis on selected themes within the early modern and modern periods. (F,SP) Staff

105. Rhetorical Theory and Practice in Historical Eras. (4) Course may be repeated for credit with diff- erent instructor. Three hours of lecture per week. Examination of situations between rhetoric, dis- course, and knowledge in selected historical eras, for example the European Renaissance, the Atlantic En- lightenment, 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 of argumentation for students with well-developed writing skills. Ethical, logical and grammatical use of register; tone; assessment of a wide variety of real audiences; genre studies. (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, hor- ror/thriller, melodrama) with attention to theories of genre in popular culture. 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, in- cluding voice, point of view, time orders, and related matters.

B. Content and Context: Interpretation of authorial inten- tionality 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 re- lationship 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. Stud- ies in the relationships between poetic theory and po- etic practice from Aristotle’s Poetics to the present day. Staff

126. Rhetoric of the Realist Novel. (4) Three hours of lecture per week. Prerequisites: Upper division standing. Rhetorical analysis of the realist novel in the context of intellectual and social history. The course will explore the development of literary realism in re- lation to the social problems of industrialization and ur- banization in nineteenth-century Europe. 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 socio- political and cultural political vocation of the Bildungsroman and the realist novel: autobiography and the rise of liberal in- dividualism; political censorship; and the role of the novel in imagining the nation. (F,SP) Staff

128. Novel into Film. (3) 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 mythical, symbolic, and allegorical language as the bearer of persuasive intention. Staff

C131. Rhetoric of Religious Discourse. (4) Three hours of lecture per week. Prerequisites: Upper division standing. Rhetorical analysis of the religious discourse in the context of social and cultural change with particular reference to the historical transition from pre-industrial to in- dustrial society in the west. Staff

132. Rhetoric, Culture and Society. (4) Three hours of lecture per week. Consideration of the rhetoric of hermeneutics or biblical interpretation with special emphasis on the mythical, symbolic, and allegorical language as the bearer of persuasive intention. Also listed as Religious Studies C111. (F,SP) Staff

133. Selected Topics in Film. (4) Course may be re- peated 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 courses. This course might focus on the work of a single filmmaker, a particular content area, a specific “theme,” or a nonfiction and nongeneric category. Ex- amples: Feminist Film Practice, Gay and Lesbian Cin- ema, Race and Cinematic Representation, Alfred Hitchcock. Staff

135. Rhetoric of Narrative Genres in Nonliterate Societies. (4) Course may be repeated for credit with different instructor. Three hours of lecture per week. In- vestigation of the rhetorical and cultural principles com- mon to various genres of narrative, both prose and po-
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. The course will examine the development of rhetorical theory and practice under the Roman Empire (1st-3rd centuries CE) and the late Roman Empire (4th-6th centuries CE), with special attention to the evolution of literary genres. All texts will be studied in translation. (F.S.P) Staff

139AC. Autobiography and American Individualism. (4) Three hours of lecture per week. Prerequisites: Upper division standing. This course will examine the nature of autobiography and its influence on American culture. The course satisfies the American cultures requirement. (F.S.P) 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 the “howness” of things as opposed to the “whatness” of things. Topics to include questions of taste, aesthetic judgment, expression, and representation. Staff

141AC. American Cultures as a Problem of Postmodernism. (4) Three hours of lecture per week. Prerequisites: Upper division standing. This course will examine 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. (F.S.P) 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 understanding theoretical foundations for critically observing and participating in the contemporary political process. (F.S.P) Staff

152. Rhetoric of Constitutional Discourse. (4) Three hours of lecture per week. The rhetorical context of The Federalist. This course will examine the founding of the United States as a new nation and its establishment as a republic. Readings will be drawn from primary and secondary sources in the Western tradition, in translation where appropriate. Staff

154A. Legal Discourse. (4) Three hours of lecture per week. Prerequisites: Any 1A-1B sequence or upper division standing. Examination of the role of rhetoric in legal practice, with an emphasis on rhetorical analysis of legal cases, decisions, and processes. Readings will be drawn from primary and secondary sources in the Western tradition, in translation where appropriate. Staff

155. Discourses of Colonialism and Postcoloniality. (4) Course may be repeated for credit. Three hours of lecture per week. This course will explore the historical context and its influence on colonial and postcolonial discourses. (F.S.P) Staff

157A. Rhetoric of Modern Political Theory. (4) Three hours of lecture per week. Formerly 157. Study of the theoretical traditions of modern political thought, including debates over the nature and interpretation of political theory and the role of the political theorist. Specific themes and readings vary from year to year. (F.S.P) Staff

159A. Great Theorists in the Rhetoric of Political and Legal Theory. (4) Three hours of lecture per week. Prerequisites: Permission of instructor. This course will examine the theories of two theorists or an important issue or theme, with close readings of major texts as well as attention to important commentators. Staff

159B. Great Themes in the Rhetoric of Contemporary Political and Legal Theory. (4) Three hours of lecture per week. Prerequisites: Permission of instructor. This course concentrates on topics of 20th century social, political, and legal theory that are too complex to be treated comprehensively as one section of the courses in modern theory. Staff

160. Introduction to the Rhetoric of Legal Discourse. (4) Three hours of lecture per week. The application of rhetorical methodology to all categories of legal texts. (F.S.P) Staff

162AC. Rhetoric of American Culture. (4) Three hours of lecture/discussion per week. Prerequisites: Upper division standing. This course will explore 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 and historical materials as well as legal and governmental documents. This course satisfies the American cultures requirement. (F.S.P) Staff

164. Rhetoric of Legal Theory. (4) Three hours of lecture per week. Rhetorical methodology applied to close analysis of the argumentative framework of important works in modern legal theory. (F.S.P) Staff

165. Rhetoric of Legal Philosophy. (4) Three hours of lecture per week. Consideration of basic philosophical issues related to the political and moral foundations of the law. Staff

166. Rhetoric, Law, and Politics in Ancient Greece and Rome. (4) Course may be repeated once for credit with consent of 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. (F.S.P) Staff

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, 165, or 155. Thorough consideration of particular social, political, or legal issues within the field of legal theory, legal philosophy, and legal argumentation. (F.S.P) Staff

168. Rhetoric, Law, and Political Theory, 1500-1700. (4) Three hours of lecture per week. Examination of European rhetorical and legal discourse from 1450 to 1700. (F.S.P) Staff

170. Rhetoric of Social Science. (4) Three hours of lecture per week. Analysis of the ways in which political scientists, sociologists, anthropologists, economists and psychologists establish the authoritativeness of their claims. Focus is on the presentation of data as fact, the use of quantitative methods, and other “strategies” through which social knowledge is transformed into objective information. Staff

171. The Problem of Mass Culture and the Rhetoric of Social Theory. (4) Three hours of lecture per week. Study of the textual strategies by which the masses and mass culture emerge as objects of anxiety, hope, and scrutiny for social theorists of the 19th and 20th centuries. Staff

172. Rhetoric of Social Theory. (4) Three hours of lecture per week. Rhetorical analysis of theorists from Marx and his contemporaries to contemporary representatives of social and economic thought. Staff

173. Rhetoric of Historical Discourse. (4) Three hours of lecture per week. A study of how historical knowledge is produced and interpreted. Topics might include narrative and representation, the uses of evidence, forms of historical argumentation, and historical controversies in the public realm. (F.S.P) Staff

174. Rhetoric of Scientific Discourse. (4) Three hours of lecture per week. Examination of the characteristic functions of discourse in and about the natural sciences; with particular examination of the ways in which scientific communities generate shared understandings, and at the same time, obscure the expression of social norms in scientific facts. (F.S.P) Staff

175. Rhetoric of Philosophical Discourse. (4) Three hours of lecture per week. Introduction to theoretical issues involved in applying rhetorical analysis to philosophical discourse, intensive analysis of selected philosophical works. (F.S.P) Staff

176. Rhetoric of Sexual Exchange and Sexual Difference. (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 corporeality; the figure of woman as object of exchange in history and contemporary cinema; prostitution, surrogacy and IVF, and the global traffic in female labor; and an examination of how sexual difference functions as a blind-spot in theories of culture, society, and economy. (F.S.P) Staff

181. Undergraduate Seminar on the Theory and Practice of Reading and Interpretation. (4) Three hours of lecture per week. Prerequisites: Any 1A-1B sequence and consent of instructor. An introduction to contemporary modes of reading and interpretation. From structuralism and semiotics to postmodern theory, with an emphasis on theories of the sign (semiotics). Examples drawn from such fields as contemporary literature, architecture, history, painting, film, and popular culture. Staff

189. Special Topics. (4) Course may be repeated for credit with different topic. Three hours of lecture per week. Staff

H190A-H190B. Honors Thesis. (2,2) Tutorial. Students 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 guidance of a faculty director culminating in a written thesis. Required of all rhetoric majors desiring to earn the A.B. degree with honors. (F.S.P) Staff

H190W. 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. (F.S.P)

H190A-H190B. Honors Thesis. (2,2) Tutorial. Students 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 guidance of a faculty director culminating in a written thesis. Required of all rhetoric majors desiring to earn the A.B. degree with honors. (F.S.P) Staff

H190W. 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. (F.S.P)
group of students on a topic initiated by those students. (F,SP) Staff

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 accommodated. (F,SP) Staff

Graduate Courses

200. Classical Origins of the Rhetorical Tradition. (4) Three hours of seminar per week. Prerequisites: Graduate status. Intensive examination of the central issues confronting rhetorical criticism in the twentieth century. Normally required of all graduate students. Staff

205. Contemporary Rhetorical Theory and Criticism. (4) Three hours of seminar per week. Prerequisites: Graduate standing. Intensive examination of the central issues confronting rhetorical criticism in the twentieth century. Normally required of all graduate students. Staff

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. Rhetoric in a specified historical era, both as expounded by theorists and as it permeated various forms of discourse. Special topics in a given period (Ancient Greece, Ancient Rome, the Middle Ages, the Renaissance, the 17th century, the Enlightenment, and so forth) may be specified. (F) Staff

240. Rhetorical Theory and Criticism. Course may be repeated for credit as topic varies. Three hours of seminar per week. Prerequisites: Graduate standing. Advanced investigation of the rhetorical dimensions of various modes of discourse. Specific topics to be announced. Staff

240D. Nonfictional Prose. (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. A considerable 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 examination of the import of such analyses for our reading of more traditional accounts of specific periods in modern scientific history. Will aim at refining the questions that have been posed by feminists, and developing techniques for further analysis of the role that cultural norms of gender have played in the history of science. Staff

241. Advanced Rhetorical Studies of Genre in Media and Literature. (4) Course may be repeated for credit. Three hours of seminar per week plus two film viewings. Prerequisites: Graduate standing or consent of instructor. Advanced investigation on genre as a theoretical concept in premodern and oral literature and in various media. Staff

243. Special Topics in Film. (4) Course may be repeated for credit as topic varies. Three hours of seminar per week plus two film viewings. Prerequisites: Graduate standing. A theoretical examination of a film topic which falls outside the purview of traditional cat- egories as defined by genre, such as “genre,” “history,” or “theory.” Examples: Rainer Werner Fassbinder, The Essay Film, Feminist Film Practice, Cinema and the Phantasmagoria of History. Staff

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 it has 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 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

(College of Letters and Science)

Graduate Office: 5309 Dwinelle Hall, (510) 642-8037

Advisers
Albert R. Asscil, Ph.D. (Italian Studies)
Steven Botterill, Ph.D. (French)
Dru Dougherty, Ph.D. (Spanish and Portuguese)
David F. Hult (French)
Ignacio Navarrete, 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), prepared with emphasis in the literature or in the linguistics or philological history of one of the three programs. 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 with the language training by passing a written examination. It is founded upon the belief that a truly comprehensive understanding of any of the major Romance languages and literature must be nourished by a substantial degree of familiarity with all of them.

Students choose from among three plans whose prerequisites vary slightly. Plans I and II require a B.A. degree with studies in Spanish, Italian, or French, approximately equivalent to the under- graduate course entitled Linguistic History of Romance Languages (French C202, Italian C201, or Spanish C202), is also required.

In all plans, work beyond the requirements may be added in any of the following areas (such as Catalan, Portuguese, Occitan, or Rumanian). All students are given three options with respect to the second collateral: (a) familiarity with the history and structure of the second language; (b) familiarity with the history and structure of a related Romance language (Catalan, Galician, Occitan, Portuguese, Romanian, or Romance-based creoles); (c) a broadly defined field of linguistics (phonology, morphology, syntax, semantics, pragmatics, sociolinguistics), philology (textual criticism, medieval literature), or the application of linguistic methods to a field to be chosen by the student in consultation with a graduate adviser. Students will develop an individually tailored reading list for the option they choose, in consultation with and approved by an appropriate faculty member. The course entitled Linguistic History of Romance Languages, taken as either French C202, Italian C201, or Spanish C202, is also required.

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; by holding a graduate 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 literatures 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 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 English, one member from the student’s first collateral, and one additional member representing the second collateral. This examination is oral and normally three hours long.

*Professor of the Graduate School
†Recipient of Distinguished Teaching Award
Scandinavian
(College of Letters and Science)

Department Office: 6303 Dwinelle Hall, (510) 642-4484
http://bs.berkeley.edu/dept/scandinavian
Chair: Elaine Tannen, Ph.D.

Professors
Carol J. Glover, Ph.D. University of California, Berkeley. Celtic studies, film studies
John Lindow, Ph.D. Harvard University. Philology, folklore, medieval literature
Eric C. Johannesson (Emeritus), Ph.D. University of California, Berkeley. Narrative, Swedish literature, Scandinavia
James L. Larson (Emeritus), Ph.D. University of California, Berkeley. Lyric, heroic, learning

Associate Professors
Daniel F. Melia, Ph.D. Harvard University. Oral literature, Cetlir folklore
Linda Haverty Rugg, Ph.D. Harvard University. 19th and 20th century Swedish literature, comparative literature, autobiography, folklore, historical film
Mark Sandberg, Ph.D. University of California, Berkeley. Film history, modern Swedish drama
Karin L. Sanders, Cand. mag. University of Copenhagen. Danish literature, gender studies, narrative
Gregory P. Nybo (Emeritus), Ph.D. University of California, Berkeley. Norwegian literature, narrative, drama

Lecturers
Karen Keller, Cand. Phil. University of Copenhagen. Language coordinator, Nordic philology
Sirkku Tuomainen, M.A. San Francisco State University. English as a second foreign language

Major and Graduate Adviser: Ms. Rugg.

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 degree or the Doctor of Philosophy in Scandinavian studies.

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 with less 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 Scandinavian literature. A major and two minors. Upon passing the qualifying examination the student is advanced to candidacy and begins dissertation research.

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

212. The Romance Epic. (3) Three hours of seminar per week. Problems in the study of French, Spanish, and Provençal epic: origins, development, textual transmission, style, structure, themes, social context, and relationships to other genres. Duggan

299. Special Advanced Study.-12 Course may be repeated for credit. Variable. Must be taken on a satisfactory/unsatisfactory basis. Individual research. (F,SP) Staff

Scandinavian

Lower Division (8 units). Three courses from the following course sequences: Scandinavian 1A-1B (Swedish), 3A-3B (Norwegian), or 4A-4B (Danish), or their equivalents.

Upper Division (38 units). Nine upper division courses, including the two-semester advanced language course sequence: Scandinavian 100A-100B or the equivalent plus 2 units of Major Research (Scandinavian 149). Two-semester upper division language sequence (8 units): Scandinavian 100A-100B (4,4); Scandinavian Languages and Linguistics (equivalent of Intermediate Danish, Norwegian, or Swedish).

Two history courses from the following (8 units): Scandinavian 123 (4), 127 (4), or 128 (4).

Four courses in literature, culture, or folklore chosen from the following (20 units): Scandinavian 106, 107, 108, 114, 115, 116, 117, 123, 125, 127, 128, 140A, 140B, 150, C160, 165, 170, or 180 (4 units each).

Note: The undergraduate faculty adviser may approve substitutions for relevant courses taken in other departments or colleges or from the Education Abroad Program. Since Scandinavian 140A-140B is only offered once, the upper division courses listed under history, literature, culture, or folklore can be used as substitutes by permission of the undergraduate faculty adviser.

Scandinavian 149, Major Research (2 units): In addition to the nine upper division courses above, students must also take two 1-unit courses of Scandinavian 149, Major Research, in conjunction with any of the upper division courses listed under literature, history, culture, or folklore. These 149 research courses must be taken by permission of the relevant instructor and the undergraduate faculty adviser.

Current majors will also want to consult the link on our web site detailing upcoming courses.

Honor Program. Students must complete with distinction the courses required for the major as well as two semesters of Scandinavian 145. A thesis is also required.

The Minor

Total units for the minor: 20.

Required courses: Five upper division courses chosen in consultation with the undergraduate faculty adviser.

2. Four electives.

Note: Students with credit from Education Abroad courses should consult with the undergraduate 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 culture, history, literature, architecture, and other areas within the humanities and social sciences. Many of the courses may be applied 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. For details for programs are available from Berkeley Programs for Study Abroad, 160 Stephens Hall, (510) 642-1356; http://www.ias.berkeley.edu/bpsa/.

Graduate Program

The undergraduate faculty adviser may approve substitutions for relevant courses taken in other departments or colleges or from the Education Abroad Program. Since Scandinavian 140A-140B is only offered once, the upper division courses listed under history, literature, culture, or folklore can be used as substitutes by permission of the undergraduate faculty adviser.

Scandinavian 149, Major Research (2 units): In addition to the nine upper division courses above, students must also take two 1-unit courses of Scandinavian 149, Major Research, in conjunction with any of the upper division courses listed under literature, history, culture, or folklore. These 149 research courses must be taken by permission of the relevant instructor and the undergraduate faculty adviser.

Current majors will also want to consult the link on our web site detailing upcoming courses.

Honor Program. Students must complete with distinction the courses required for the major as well as two semesters of Scandinavian 145. A thesis is also required.

The Minor

Total units for the minor: 20.

Required courses: Five upper division courses chosen in consultation with the undergraduate faculty adviser.

2. Four electives.

Note: Students with credit from Education Abroad courses should consult with the undergraduate adviser for help in determining requirement equivalents.

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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 degree or the Doctor of Philosophy in Scandinavian studies.

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 with less 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 Scandinavian literature. 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. (3) 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
18. 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. (SP) Tuomainen

2A. Beginning Finnish. (4) Three hours of language instruction and one hour of laboratory per week. Students will develop the basic elements of communicative competence in both the spoken and written language within a cultural context. (F) Tuomainen

2B. Beginning Finnish. (4) Three hours of language instruction and one hour of 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. (SP) Tuomainen

3A. Beginning Norwegian. (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

R5A. Reading and Composition. (4) Three hours of lecture per week. Prerequisites: Subject A 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

R5B. Reading and Composition. (4) Three hours of lecture per week. Prerequisites: R5A 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

12. Intermediate Finnish. (4) Three hours of language instruction and one hour of laboratory per week. Prerequisites: 2B or consent of instructor. This course will further develop students’ oral communicative competence, their reading and writing ability, and cultural understanding. More complex grammatical structures will be analyzed and practiced. (F,SP) Tuomainen

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. (F,SP) Staff

39. Freshman Seminar. (3) Course may be repeated for credit as topic varies. Three hours of seminar per week. Designed to introduce students to an area of Scandinavian linguistics. Topics will vary from year to year; all readings are in English. Prospective students should consult with the instructor before enrolling in the course. (F,SP) Staff

75. Scandinavian Culture and Society. (4) Three hours of instruction per week. Concentrates on four historical periods: the Viking Age, the Baroque (emphasis on 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 fifteen weeks. One and one half hours of seminar 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. Prerequisites: Open to sophomore and junior students. Course may be repeated with consent of instructor. Students will develop the basic elements of communicative competence in both the spoken and written language within a cultural context. (SP) Tuomainen

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. Prerequisites: Freshman or sophomore standing. Group study of selected topics not covered by regularly scheduled courses. (F,SP) Staff

Upper Division Courses

100A. Scandinavian Languages and Linguistics. (4) Two hours of language instruction and one hour of lecture in the cultural component per week. Prerequisites: 18, 38, or 4B or consent of instructor. Formerly 11, 12, 14, 16. In the late 8th century, the Viking Age came to an end. This course will examine the language of this entire period. 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 a unique opportunity for students to gain 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

125. Old Norse Literature. (4) 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

127. Scandinavians from 1520-1800. (4) Three hours of lecture and one hour of discussion per week. Scandinavian society, history, and culture from the Napoleonic Era to the present. (SP) Moller

128. Scandinavians from 1800-the Present. (4) Three hours of lecture and one hour of discussion per week. Scandinavian society, history, and culture from the Napoleonic Era to the present. (SP) Tuomainen

129. 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 for up to two hours of seminar credit. Prerequisites: 140A-140B. Intensive study of a single topic, several reports, a longer paper. (F,SP) Staff

150. Studies in Scandinavian Literature. (4) Three hours of lecture per week. Sample topics: Scandinavian Romanesque; the Modern Break-through; 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 manifestations in later religions. 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, ballads) and their contexts. Such minor verbal forms as proverbs, 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 of the indigenous peoples of the North. Topics to be selected from among the following: Inuit, Sami, and more central features of Scandinavian folklore. 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 particular focus on the experiences 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 study of one Scandinavian language. Advanced level 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 study of one Scandinavian language. Courses may not be repeated. No credit or grade for courses over 5 units. 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) Clover, Lindow

201B. Norse Literature. (4) Three hours of lecture per week. Readings and interpretation of representative works. Topics vary from semester to semester; see departmental announcement for description. Course normally focuses on one of two areas: Eddic and skaldic poetry; or narrative traditions (legends and folk belief, folktales, ballads) and their contexts. Such minor verbal forms as proverbs, riddles, and formulas will also be considered.

Readings and discussion in English. (F,SP) Lindow


203. Early Scandinavian Literature. (4) Three hours of lecture per week. Prerequisites: 201A or equivalent. Courses may not be repeated. Students may not be used to meet unit or residence requirements for the master's degree. (F,SP) Møller

260. Seminar in Scandinavian Literature. (4) Course may be repeated for credit. Three hours of seminar per week. Investigation of selected authors, topics, or problems. Variable subject matter; see departmental announcement for description. (F,SP) Staff

296. Special Study. (2-12) Course may be repeated for credit. Two hours of meeting per week that will examine current theory and practice in this discipline. Their thesis research will consist of a two-hour session per week. Investigation of selected authors, topics, or problems. Three hours of seminar per week. Three hours of student effort per week. Two hours of meeting per week. Prerequisites: Consent of instructor. Practical experience on an educational research or development project on campus or elsewhere for 8-12 hours per week. Class meetings augment research experience with discussions of readings and interaction with guest speakers. (F,SP)

296B. Teaching Practicum. (1) Course may be repeated for credit. One hour of observation per week. Must be taken on a satisfactory/unsatisfactory basis. Prerequisites: Graduate Student Instructor in the Scandinavian department. Students may not be used to meet unit or residence requirements for the doctoral degree. (F,SP) Staff

Professional Courses

300A. Methods of Teaching Scandinavian Languages. (3) Course may be repeated for credit. Three hours of lecture per week. Prerequisites: 300B and Graduate Student Instructor in the Scandinavian department. Students may not be used to meet unit or residence requirements for the master's degree. (F,SP) Møller

300B. Teaching Practicum. (1) Course may be repeated for credit. One hour of observation per week. Must be taken on a satisfactory/unsatisfactory basis. Prerequisites: Graduate Student Instructor in the Scandinavian department. Students may not be used to meet unit or residence requirements for the doctoral degree. (F,SP) Møller

Course

Science and Mathematics Education

(Contract of Letters and Science)

Group Office: 4533 Tolman Hall, (510) 642-4207

Faculty

Alice M. Agogino, Ph.D. Stanford University. Artificial intelligence and expert systems, design theory and methods, engineering education, qualitative reasoning. (Mechanical Engineering)

Martin V. Covington, Ph.D. University of California, Berkeley. Classroom learning dynamics, student motivation and creative thinking. (Psychology)

Marcia C. Linn, Ph.D. University of California, Berkeley. Neuroanatomy, environment, asymmetry, hormones (Integrative Biology)

Bernard R. Gifford, Ph.D. University of Rochester. Organizational theory, policy analysis, resource allocation policies, micro-implementer, fiscal strategy management, technology and education (Chancellor's Professor)

Barbara Y. White, Ph.D. Massachusetts Institute of Technology. Physical chemistry, expert systems, (Chemistry)

Michael Ranney, Ph.D. University of Pittsburgh. Problem solving, individual differences associated with expertise, computer-based learning environments, computational models of cognition, naive physics, intelligent tutoring systems. (Engineering and Computer Sciences)

Angelica Stacy, Ph.D. Cornell University. Inorganic and physical chemistry (Chemistry)

Kenneth Sauer, Ph.D. Harvard University. Biophysical chemistry (Chemistry)

Alan H. Schoenfeld, Ph.D. Stanford University. Psychology of mathematical problem solving, metacognition, belief systems. (Education and Mathematics)

Herbert D. Thier, Ed.D. New York University. Computational models of cognition and mathematical expertise, computer-based learning environments, metacognition, instructional design (Education and Computer Science: Chair of SESAME)

Affiliated Members

Michael Clancy, Ph.D. Stanford University (Electrical Engineering and Computer Sciences)

Graduate Courses

210. Practicum in Science and Math Education Research and Development. (1-4) Course may be repeated for credit. One unit per credit for each four hours of student effort per week. Two hours of meeting per week. Prerequisites: Consent of instructor. Practical experience on an educational research or development project on campus or elsewhere for 8-12 hours per week. Class meetings augment research experience with discussions of readings and interaction with guest speakers. (F,SP)

292. Research Seminar and Colloquium. (1) Course may be repeated for credit. Two hours of lecture/discussion per week. Must be taken on a satisfactory/unsatisfactory basis. Prerequisites: Consent of instructor. Discussion of current educational research carried on by students, faculty, and guest speakers. A written analysis of several presentations required. (F,SP)

294. Formulation of Educational Research. (1-3) Course may be repeated for credit. One unit per credit for each four hours of student effort per week. Individual courses. Prerequisites: Con-
Slavic Languages and Literatures
(College of Letters and Science)

Department Office: 6303 Dwinelle Hall, (510) 642-2979 http://www.lsl.berkeley.edu/dept/slavic/index.html

Professors
Ronelle Alexander, Ph.D. Harvard University. South Slavic linguistics, and folklore.
David A. Frick, Ph.D. Yale University. Polish and pre-modern Slavic literatures and cultural history.
Oleg Malich, Ph.D. University of California at Los Angeles. Russian literature and cultural history.
Joana Nichip, Ph.D. University of California, Berkeley. Slavic linguistics and typology.
Imra Paperno, Ph.D. Stanford University. Russian literature and cultural history.
Alan Timmerman, Ph.D. Harvard University. Slavic linguistics.
Viktor Zuyov, Ph.D. Moscow University. Russian linguistics.
Joan Grossman, Ph.D. (Emerita)
Olga Raevsky Hughes, Ph.D. (Emeritus)
Robert P. Hughes, Ph.D. (Emeritus)
Simon Karlinsky, Ph.D. (Emeritus)
Hugh McLean, Ph.D. (Emeritus)
Walter Schamschula, Ph.D. (Emeritus)

Associate Professors
Eric Naiman, Ph.D. University of California, Berkeley. Russian literature and culture.
Anne Nesbet, Ph.D. University of California, Berkeley. Russian literature and film.
Harsha Ram, Ph.D. Yale University. Russian literature.

Lecturers
Arkady Aseev, Ph.D. University of California, Berkeley. Russian language, Slavic linguistics.
Lisa Little, M.A. University of Texas at Austin. Russian language, language teaching methodology.
Anna Markova, Ph.D. Hungarian, Hungarian language.
Anna Muza, Ph.D. Institute of Theater Arts (GITIS; currently Russian Academy of Performing Arts)

Major Advisor: Ms. Alexander.
Graduate Advisers: Ms. Matich (Literature), Ms. Nichols (Linguistics).

Department Overview

The Department of Slavic Languages and Literatures provides instruction in the cultures of Russian and other Slavic peoples (Bulgarian, Czech, Polish, and Serbian/Croatian) as well as some of the non-Slavic peoples of Eastern Europe (Hungarian) and Eurasia (Chechen, Georgian, Uzbek, etc.). In addition to language and literature, our department teaches aspects of Slavic cultures, including film, drama, visual arts, popular culture, critical theory, religious thought and cultural history.

Majors: The department offers three different major tracks. The major track in Russian/East European/Eurasian Cultures teaches different aspects of Slavic cultures, in addition to language, literature, institutions, and culture. It requires three years of language course work or the equivalent. The major tracks in other Slavic languages and literatures allow students to focus intensively on Czech, Polish, or Serbian/Croatian.

Minors: The department offers a range of minors in Russian and other Slavic languages, literatures, and cultures. Students normally discuss the possibility of doing a minor with the faculty or staff major advisor well before graduation, although the paperwork is carried out in the last semester after the students complete the minor course work.

Courses for minors and majors must be taken for a letter grade.

Major Track in Russian/East European/Eurasian Cultures (50-52 units)

This major track integrates the study of languages and cultures of a large area: Russia, Eastern/Central Europe, and Eurasia. Students design their own programs by selecting courses offered by the Slavic department and other departments such as History, Sociology, Art, Political Science, Music, and Peace and Conflict Studies. While all majors in this track will gain knowledge of the whole area, the program can allow an undergraduate to emphasize a specific cultural region, or to compare different regions, or to define a particular field of study. Students are advised to see the major advisor in advance to prepare an individualized study list plan. Students are encouraged to declare the major after the successful completion of two semesters of their designated elementary language emphasis.

Requirements

Lower Division (22-24 units): (1) Four semesters of one language of the area (18 to 20 units) or the equivalent, as determined by examination. The department highly recommends additional exposure to language, in course work, intensive summer language programs, or the Education Abroad Program.

Languages offered by this department that can be used for the major are Russian, Polish, Czech, Serbian/Croatian, and Hungarian. These following languages have been offered periodically in our department or other departments and may, by special arrangement, be used for this major track: Georgian, 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 advisor, 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 topical course: Slavic 148. Topics in Russian Cultural History or Slavic 159. 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 155; History 116B, 117, 130, 141A, 141C; Sociology 181. With permission of the major advisor, students may substitute relevant courses from the following departments: Anthropology, Art History, Comparative Literature, Economics, Journalism, Legal Studies, Peace and Conflict Studies, Theater, Dance, and Performance Studies. Of these courses, a minimum of one and a maximum of three courses can 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 as ecademic lang agerelavent to the program of study can be counted toward this requirement.

Major Track Program in Russian Language and Literature (53-56 units)

This major track integrates the study of Russian language, literature, institutions, and culture. Students will learn what defines Russia’s unique place in civilization, both in earlier times and in today’s world.

Requirements

Students may declare the major after completion of Slavic 2 and either Slavic 45 or 46.

Lower Division (26 units): (1) The first four semesters of Russian (Slavic 1, 2, 3, 4) or the equivalent.

(2) Nineteenth- and twentieth-century surveys of Russian literature (Slavic 45 and 46).

Upper Division (27-30 units): (1) Advanced Russian language (Slavic 103A, 103B) and Russian conversation (Slavic 120A or 120B).

(2) One literature course with readings in Russian (Slavic 180, 181, 182 or 188).

(3) One Russian literature class in English translation (Slavic 131, 132, 133, 134A, B, C, D, E, F, N, or 146).

(4) One course in culture selected from the following: Russian culture (Slavic 130, 131, 140, 146, 148, 190); the literatures of other Slavic peoples (Slavic 150, 160, 170); folklore (Slavic 147); linguistics (Slavic 137); film (Slavic 138).

(5) Two additional upper division elective courses (3 or 4 units each) in Russian language, literature, or culture selected from the courses listed above. Relevant courses from other programs—or example, history—may be substituted with the permission of the major advisor.

Major Track in Czech, Polish, or Serbian/Croatian Language and Literature (53-56 units)

With advance consultation, students may arrange majors in Czech, Polish, or Serbian/Croatian.

Requirements

In addition to Slavic 1 and 2 (10 units of elementary Russian) and two lower division courses in literature and culture chosen from 36, 37, 39, 45, and 46 (6 units), the requirements include:

(1) 10 units of the relevant elementary language [Slavic 25A-25B (Polish), 26A-26B (Czech), 27A-27B (Serbian/Croatian)]

(2) 8 units of intermediate language (Slavic 115A-115B, 116A-116B, or 117A-117B).

(3) 3 units of the survey course in the relevant literature (Slavic 150, 160, or 170; or with the appropriate content and permission of the major advisor, 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 advisor, 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

* Professor of the Graduate School
† Recipient of Distinguished Teaching Award
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 additional lower division 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 in the department office). This application includes a preliminary statement of the thesis topic and the names and signatures of two 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 literature, language, and culture, and (d) Slavic languages/literatures with an emphasis in either Czech, Polish, or Serbian/Croatian 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 at any time after the prerequisite courses have been successfully completed. Students may apply up to two courses toward the minor that are required for a major. Each minor program 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 language minors are not open to native speakers of the languages.

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/or Russian and other Slavic literatures and cultures. Students may choose courses in 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, 147, 148, 150, 160, 170).

Four courses in Russian literature (chosen from Slavic 132, 133, 134A-134B-134C-134D-134E-134F-134N, 138, 140, 189, 181, 182, 188).

Total lower division units: 6
Total upper division units: 19-20

Minor in Czech, Polish, Serbian, or Croatian 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 and 171 or 172) and substitutes approved by the major adviser.

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 fall 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 special 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, conferences, 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 classical 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.

Ph.D. Requirements. Literature: The Ph.D. program in Russian literature consists of (a) additional course work in literary history (including the Medieval and early Modern periods) and theory; participation in research seminars and independent research. In addition, students develop knowledge of two and Slavic languages/literatures (Polish, Czech, Serbian/Croatian, Bulgarian), film, visual arts, music, comparative literature, minor field (e.g., film, Russian or East European history, Eurasian studies, etc.). (b) An extended written research project under faculty supervision and evaluation on a topic relative to the student’s field of study and interests. (c) Written and oral Ph.D. examinations. (d) A dissertation.

Linguistics: The Ph.D. program in Slavic linguistics consists of (a) required course work in a set of core courses covering comparative Slavic linguistics, advanced structure of Slavic languages, history of Slavic literary languages, and two semesters of a third Slavic language. (b) Additional courses and seminars in at least one field 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. (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 Serbian/Croatian. Internships (Slavic 310) are available in the teaching of literature or Slavic linguistics.

Graduate Programs

M.A. and Ph.D. programs are offered in Russian, Polish, Czech, Bulgarian, and Serbian/Croatian, 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 linguistics. Students who choose other Slavic literatures as their major field are offered individual programs of study.

M.A. Course Work. Russian Literature Program: (a) Required skills and methods courses: Proseminar in literary scholarship, Old Church Slavic, Russian stylistics, descriptive grammar, proficiency maintenance; (b) selected courses in history and theory of literature to be chosen from offerings that include Eighteenth-Century Literature, Slavic Literary Theory, Sentimentalism and Romanticism, Realism, Modernism, Poetry, and Contemporary Literature; (c) graduate research seminars (topics vary); at least one is required. Instruction in Polish, Czech, Serbian/Croatian, and Bulgarian is offered to both M.A. and Ph.D. students. Linguistics Program: (a) Required skills and methods courses: Proseminar in linguistics scholarship, Old Church Slavic, three second-year Slavic language, and in the major language—stylistics, descriptive grammar, proficiency maintenance; (b) additional courses: Historical Grammar of Slavic Languages, Medieval and Modern Slavic Texts, and, 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 examination. They must pass a reading examination of French or German or take two semesters of instruction in a second Slavic language.
Russian Literature

Lower 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 to admission to the Slavic major and recommended for prospective graduate students. (F) Staff

46. Twentieth-Century Russian Literature. (3) Three hours of lecture per week. Development of Russian literature from 1900 to the present: modernism, Soviet, post-Soviet. Prerequisite: 45 or Russian major required. Prerequisite to admission to the Slavic major and recommended for prospective graduate students. (SP) 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. 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 covered include Imperial Russia, the Communist 90s). No knowledge of Russian is required. (F,SP) Ram

132. Dostoevsky, Tolstoy, and the English Novel. (3) 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 once 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. Variable reading list. See Department announcement for description. (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: the Changing World” and “The Foreign Contexts of Russian Literature: 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

134A. 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) 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

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 with consent of instructor. Three hours of lecture/discussion per week. Prerequisites: 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 is prerequisite to 115B; 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 tenth century to the present, including medieval literature of the fourteenth century, the National Revival of the nineteenth 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: 161A (may be taken concurrently). Studies in Czech literature, linguistics, or conversation, depending on the needs of the students enrolled. Staff

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 or equivalent. (F,SP) Staff

3. Intermediate Russian. (5) Five hours of lecture and one hour of language laboratory per week. Prerequisites: 2 or equivalent. (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

10. Russian (Self-Paced). Self-paced course equivalent to Slavic 1 through 4. Students may enter or leave at any level. Any level may be repeated up to a total of five units. The student’s program, including this course, must meet the minimum study-list requirements. If units beyond those contracted for are completed, credit will be given. (F,SP) Staff

102. Readings in Specialized Russian. (3) Course may be repeated for a maximum of six units. Three hours of lecture/discussion per week. Prerequisites: 4, 14D or equivalent. Selected readings in scholarly (scientific and technical), business and professional, and other areas to acquaint the student with the peculiarities of vocabulary, grammar, and phraseology. Staff

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) Staff

104B. Advanced Russian Composition. (3) Three hours of lecture per week. Emphasis on writing, translation, and lexical analysis. (SP) Staff

105A-105B. Advanced Russian/English/Russian Translation. (1-3,1-3) Course may be repeated for credit. Three to six 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, technologi-
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 work as a novelist, critic, and memoirist. Explores Nabokov’s fiction from his early 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

134R. Research in Russian Literature. (1) Course may be repeated for credit. Individual consultation. Prerequisites: Consent of instructor. 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 European 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 viewing 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/Iranian 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 revelatory, that have marked the meetings between “east” and “west” in the wake of the imperial cultures of Europe. (F,SP) Ram

146. East/West Encounters: The Literatures of Orientalism. (4) Three hours of lecture per week. The course will focus on the exchanges between Western and Eastern cultures, which as 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 revelatory, that have marked the meetings between “east” and “west” in the wake of the imperial cultures of Europe. (F,SP) Ram

181. Readings in Russian Literature. (4) Three hours of lecture per week. Prerequisites: 103A (which may be taken concurrently). Study and analysis of the development of the Russian literary language and short fiction from the eighteenth century to the present. (F) Staff

188. Russian Prose. (4) Course may be repeated once for credit with consent of instructor. Three hours of lecture per week. Prerequisites: 103B (may be taken concurrently). Course conducted in Russian. Reading, analysis, and interpretation of representative authors from the nineteenth century to the present. (SP) Staff

Bulgarian

Lower Division Courses

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 integrated skills (reading, grammar, conversation). Course offered as staffing permits. (F,SP) Staff

Upper Division Courses

118A-118B. Advanced Bulgarian. (4,4) Course may be repeated for credit as topic varies. Three hours of lecture per week. Prerequisites: 28B is prerequisite to 118A. 118A is prerequisite to 118B; or consent of instructor.

A. This course consists of a review of Bulgarian grammar covered in 28A-28B, a thorough presentation of the complex verbal tense-mood system and readings in contemporary Bulgarian prose.

B. This course is a continuation of 118A. It also introduces the question of the relation between Bulgarian and Macedonian and readings in Bulgarian satirical poetry and prose. (F,SP) Alexander, Staff

Serbian/Croatian

Lower Division Courses

27A-27B. Introductory Serbian/Croatian. (5,5) Five hours of lecture per week. Prerequisites: 27A is prerequisite to 27B. Beginner’s course. Sequence beginning Fall semester. (F,SP) Staff

27PA. Communication in Serbian/Croatian/Bosnian. (3) Two hours of lecture per week. Prerequisites: Consent of instructor. Focusing on language practice, this course develops vocabulary, reading and conversation skills at the introductory level. Course sequence begins each fall semester. The course should be taken in conjunction with Slavic 273A-273B; a course devoted to language structure. (F,SP) Staff

27PB. Communication in Serbian/Croatian/Bosnian. (2) Two hours of lecture per week. Prerequisites: 27PA; consent of instructor. Focusing on language practice, this course develops vocabulary, reading and conversation skills at the introductory level. Course sequence begins each fall semester. The course should be taken in conjunction with Slavic 273A-273B; a course devoted to language structure. (F,SP) Staff

27SA. Introduction to the Structure of Serbian/Croatian/Bosnian. (3) Three hours of lecture per week. Prerequisites: Consent of instructor. Focusing on language structure, this course introduces students to the common linguistic core (grammar and structure) of the former Yugoslavia, mainly Serbian, Croatian, and Bosnian and considers the social and cultural situation of these languages. Course sequence begins each fall semester. This course is usually, but not necessarily, taken in conjunction with Slavic 27PA-27PB. (F,SP) Staff

27SB. Introduction to the Structure of Serbian/Croatian/Bosnian. (3) Three hours of lecture per week. Prerequisites: Consent of instructor. Focusing on language structure, this course introduces students to the common linguistic core (grammar and structure) of the former Yugoslavia, mainly Serbian, Croatian, and Bosnian and considers the social and cultural situation of these languages. Course sequence begins each fall semester. This course is usually, but not necessarily, taken in conjunction with Slavic 27PA-27PB. (F,SP) Staff

Upper Division Courses

117A-117B. Advanced Serbian/Croatian. (4,4) Course may be repeated for credit as topic varies. Three hours of lecture per week. Prerequisites: 27B is prerequisite to 117A; 117A is prerequisite to 117B. Sequence begins fall semester. (F,SP) Alexander

170. Survey of Yugoslav Literatures. (3) Three hours of lecture per week. Outline of major developments in Serbian (including Montenegro) and Croatian (including Dalmatian) literatures from the beginnings to the present. No knowledge of Serbian/Croatian required. (F,SP) Alexander

171. Readings in Yugoslav Literatures. (4) Course may be repeated for credit with consent of instructor. Three hours of lecture/discussion per week. Prerequisites: 117A. Selected readings in Serbian/Croatian, tailored to the academic interests of students enrolled. (F,SP) Alexander

General and Other Slavic

Lower Division Courses

R5A-R5B. Writing and Reading about Russia. (4,4) Three hours of lecture per week. Prerequisites: Subject A or equivalent for RA; 5A or equivalent for RB. 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 voices. R5A satisfies the first half of the Reading and Composition requirement, and R5B satisfies the second half. (F,SP) Staff

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/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 vary from department to department. Enrollment limited to 15 freshmen. (F,SP) Nichols

39. Freshman/Sophomore Seminar. Course may be repeated for credit as topic varies. Three hours 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. 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) Staff

50. Introduction to Russian/East European/Eurasian Cultures. (3) Three hours of lecture per week. This course introduces students to the cultures of the peoples of the former Soviet bloc (Russia and other areas of the former Soviet Union, including Central Asia and the Caucasus, and Eastern Europe), from early times to the present, with the emphasis on Russian civilization. Readings in history, fiction, folklore, viewing of films, and art works. The thematic units include: formation of the Russian civilization, Slavic nationalism in the Middle Ages, Russia and Art and Empire and the identity of the Russian Empire, empire and identity in Eastern/Central Europe, Soviet and post-Soviet daily life, Jews in Slavic lands, the former Yugoslavia, multi ethnic lands. Required of majors in Russian/East European/Eurasian cultures, the course is also aimed at a broad audience. Knowledge of the languages of the area is not required. (F,SP) Staff

84. Sophomore Seminar, (1,2) Course may be repeated for credit as topic varies. One hour of seminar per week for fifteen weeks. One and one half hours of seminar per week for ten weeks. Two 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. 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. 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: 3.0 GPA. Supervised independent study for lower division students with a minimum 3.0 GPA. (F,SP) Staff

Upper Division Courses

100. Seminar: Russian, East European, and Eurasian Cultures. (4) Course may be repeated for credit. Three hours of seminar per week. An in-depth study of cultural history, literature, language, and society of Eastern Europe and the former Soviet Union. Variable topics. Course readings include primary texts (literature, film, folklore, culture, journalism) and scholarly studies. Course work emphasizes students' research. Knowledge of the languages of the area is not required; students with knowledge of the languages will be given additional readings. Final research paper of 10-20 pages required. (F,SP) Staff

C139. Language Spread. (3) Three hours of lecture per week. Linguistic background and the general principles of language spread. Mechanisms of language spread, including creolization-decreolization, language planning, and the role of bilingualism. Case studies in language spread, including Austro-Hungarian, Indonesian, European, American, Uralic, African, Sinic, and Australian languages. Relationship of language spread to immigration and culture spreads. Also listed as Linguistics C139. Nichols, Rhodes

140. The Performing Arts in Russia and Eastern Europe. (4) Course may be repeated for credit as topic varies. Three hours of lecture per week. The course will examine the Russian and East European contribution to the practice and theory of the performing arts (especially theater) but not exclusively. The course emphasizes the involvement of the performing arts in the social and cultural fabric. (F,SP) Staff

147. Slavic Folklore. (3) Course may be repeated once for credit with consent of instructor. Three hours of lecture per week. Oral traditional literature (tales, epics, lyrics, proverbs) of one or more Slavic countries. Customs, beliefs, and other forms of folklore may also be discussed. No knowledge of a foreign language required. (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 and is also enrolled. Final research paper of 10-15 pages required. (F,SP) Alexander

149AC. Ideology and Ethnicity: Images of Soviet Russia in American Culture. (4) Three hours of lecture/discussion per week. Formerly 149. The topic of this course is explored by images of Soviet Russia in the African-American, Chicano, and Jewish communities since 1917. We will examine a wide range of sources—movies, memoirs, historical documents, and films—as we consider the ways the Soviet model has served as a catalyst for the reconsideration of ethnic, racial, and class identities in the United States. This course satisfies the American cultures requirement. (F,SP) Wesblad

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 dimensions of different East European and Eurasian 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. (1-4) 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 advisor, to culminate in the development of the Honors Program. (F,SP) Staff

198. Supervised Group Study for Undergraduates. (1-4) Course may be repeated for credit. Variable. (Minimum of one meeting per week and individual consultation). Must be taken on a passed/not passed 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 passed/not passed 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. Requires 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: Graduating students. 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 life in Russia and its changing colloquial speech. Conducted in Russian. (F,SP) Staff

204. Russian Composition and Style. (4) Three hours of lecture per week. Prerequisites: 103B. Essay-writing, analysis of texts, oral and written reports, and translation. (F) Staff

210. Old Church Slavic. (4) Three hours of lecture per week. Prerequisites: Reading knowledge of a modern Slavic language or consent of instructor. Introductions 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) Staff

220. Comparative Slavic Linguistics. (4) Three hours of lecture per week. Prerequisites: 210. Re- construction of Common Slavic phonology and morphology, and dialectology of Slavic languages. (F) 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

223. Advanced Structure of Slavic Languages: Grammatical Analysis and Theory. (4) Course may be repeated for credit. Three hours of lecture per week. Prerequisites: 222. Analysis of synchronic grammar and structure of discourse of a Slavic language (Czech, Polish, Russian, or Serbian/Croatian) with attention to some cross-linguistic contrasts. See Department announcement for topic. (F) 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) from the beginnings to the present, with emphasis on periods of particular significance. See Department announcement for topic. (F) Staff

231. History of Slavic Literary Languages. (4) Course may be repeated for credit. Three hours of lecture per week. Prerequisites: 220. Linguistic history of the Slavic literary languages (Old Church Slavic, Russian, and Slovak). Staff

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 of the modern period and cultural, linguistic, and historical trends and developments in modern Slavic literary languages, as a code, examined as a consistent trend in 20th-Century literary theory. Consideration of this scholarly trend in historical perspective; its sources, evaluation, and eventual dissolution. (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) Staff

243. The Russian Novel and Literatures of Western Europe. (4) Three hours of lecture per week. The development of the nineteenth-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 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

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) Staff

245A. 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 (1990-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

280. Studies in Slavic Literature and Linguistics. (4) Course may be repeated for credit. Two hours of seminar per week. Advanced studies in the several fields of Slavic literatures and linguistics. Content varies. (F,SP) Staff

281. Proseminar: Aims and Methods of Literary Scholarship. (4) Three hours of lecture 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

*Professor of the Graduate School
Recipient of Distinguished Teaching Award
Course may be repeated for a maximum of 16 units.

European Studies

Lower Division Courses

1A-1B. Beginning Armenian. (3,3) Three hours of lecture per session. Prerequisites: 1A. None. 1B: 1A or equivalent; consent of instructor. An introduction to Armenian language and culture, aiming to give students basic competence in all four skills and an introduction to traditional and contemporary Armenian culture. (F,SP)

2A-2B. Beginning Georgiian. (3,3) Three hours of lectures per week. Prerequisites: 2A: None. 2B: 2A or equivalent; consent of instructor. An introduction to Georgian language and culture, aiming to give students basic competence in all four skills and an introduction to traditional and contemporary Georgian culture. (F,SP)

3A-3B. Beginning Uzbek. (3,3) Three hours of lectures per week. Prerequisites: 3A: None. 3B: 3A or equivalent; consent of instructor. An introduction to Uzbek language and culture, aiming to give students basic competence in all four skills, basic survival competence in Uzbek, and an introduction to the Uzbek people and culture. (F,SP)

Graduate Courses

289. Studies in the Languages of the Caucasus and Central Asia. (2-4) Course may be repeated for credit. One hour of class meeting per week per unit. Prerequisites: Consent of instructor. Formerly Slavic 289. Topics in the history, structure, and typology of the indigenous languages of the Caucasus and Central Asia. Variable subject matter. Offerings include practical courses in Georgian, Armenian, Ingush, Chechen, Kazakh, Uzbek, etc. Theoretical topics include: the Caucasus as a linguistic area, the structure of Georgian, the structure of Ingush, computational lexicography of Ingush, the structure of Chechen, Nakh-Dagestani comparative grammar, Northwest Caucasian (Abkhaz-Circassian) languages, etc. (F,SP)

Nichols

Social Welfare

(School of Social Welfare)

Undergraduate Program, 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 A.B. 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 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 declare the major as soon as they have satisfied the required prerequisites. Students should begin the sequence of four required social welfare courses with 102, continuing thereafter with 103, 105, and 106.

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 a letter grade, including Social Welfare 100, 102, 103, and 105; and a minimum of five approved social science electives, three of which must be taken in one of five specified social science departments. 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 of some magnitude. Students who meet the eligibility requirements (a 3.5 grade point average overall and in the major, and com-
plication of Social Welfare 100 and 102) may enroll in H195 in their senior year. The fall H195 (1 unit) 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 roles in teaching, and advanced practice roles in the profession. Our educational emphasis is on preparing students for professional responsibility in the field of social welfare and the institutional settings 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 at Berkeley is characterized by a significant inquiry and an emphasis on the use of tested knowledge and theory in developing and applying intervention methods. Classroom preparation focuses on knowledge of individual and family development, ethnocultural factors, policies and institutional systems governing services, and research strategies for program development and education.

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, fostering and administering the family unit, and other systems of support, respecting cultural diversity, and promoting opportunity and social and economic justice for all.

The school offers the following programs:

A two-year program of studies for the Master of Social Welfare (M.S.W.) degree prepares students for careers in social work. Classroom and field courses are designed to teach professionals to use tested knowledge and skill and research methods in their practice. Applicants for admission must have strong academic preparation in the liberal arts and sciences, including course work in the social and behavioral sciences. In addition, introductory course work in social welfare and social work, research methods, and quantitative reasoning is given special attention. Knowledge of the social welfare field and professional commitment to social work are also evaluated. Such knowledge and commitment usually demonstrate by paid or volunteer unpaid work related to social welfare. Paid experience, however, is not a requirement for admission; those who demonstrate sufficient knowledge and commitment through volunteer experience may also qualify.

Also offered is a combined program of master’s doctoral studies which begins in the first graduate year, leads to both Master of Social Welfare and Ph.D. in Social Welfare degrees, and prepares for the dissertation. Applicants must show evidence of ability to complete doctoral study successfully and must have undergraduate preparation sufficient for the M.S.W. program.

The school sponsors several special programs: the M.S.W./M.P.H. dual degree program, the social welfare/international and area studies concurrent degree program, the social welfare/law concurrent degree program, the pupil personnel services credential program, and the Title IV-E Child Welfare Training Program.

The Ph.D. in Social Welfare prepares students for careers in teaching, research, policy development, and analysis in the field of social welfare and the profession of social work. It is open to applicants who hold a master’s degree in social work or social welfare or have comparable preparation in the field and who show evidence of intellectual and other qualifications essential to successful doctoral study.

Applications. Applications for admission to any of these programs should be submitted as early as possible beginning in October and no later than December 1 for the 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 information: http://socialwelfare.berkeley.edu/. Admission to the school is contingent on admission to graduate standing; for details see the booklet Graduate Application for Admission and Fellowships.

The M.S.W. program is accredited by the Council on Social Work Education. For further information, consult our web site at http://socialwelfare.berkeley.edu/ or the Announcement of the School of Social Welfare.

**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 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 is 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 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. Freshman seminars are offered in all campus departments; topics vary from department to department and from semester to semester. 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 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 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. Students may offer opportunity for students to interact closely, regular intellectual contact between faculty members and students in the crucual second year. The topics vary from department to department and from semester to semester. Enrollment limited to 15 sophomores. (F,SP)

97. Field Studies in Social Welfare. (1-3) Field work in community agencies and independent conferences with faculty. Must be taken on a passed/not passed basis. Supervised experience relevant to specific aspects of social welfare in off-campus organizations. Regular in-person meetings with the advisor and written reports required. (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 basis. 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 conference. Must be taken on a passed/not passed basis. Enrollment is restricted by regulations specified in the General Catalog. (F,SP) Staff

**Upper Division Courses**

100. Social Welfare Policy. (3) Two hours of lecture and one hour of discussion per week. Analysis of social welfare policies and programs including public assistance, social insurance, social services, and health and mental health. (F,SP) Staff

102. Social Work As a Profession. (3) Two hours of lecture and one hour of discussion per week. This course examines social work as a profession: the practice of the profession, the organizational context of professional practice, and the ethics of the profession. (F,SP) Staff

103. Practice in Social Work. (3) Two hours of lecture and one hour of laboratory/discussion per week. An introduction to the basic skills of interpersonal helping and problem solving and to related theory and research. (F,SP) Staff

105. Current Topics in Social Welfare. (2) Course may be repeated for credit with consent of instructor. Course may be offered in the fall and spring of each academic year. Prerequisites: 102. Course examines current problems and issues in the field of social welfare. (F,SP) Staff

107. Foundations, Philanthropy, and the Social Services: Grant Writing for Program Development. (3) Three hours of lecture and one hour of discussion per week. Course explores the role of philanthropy, foundations, and proposal development in American society. A grant writing exercise in a Bay Area community agency is required. (F,SP) Terrel

C129. Children Through History: Social Practices and Social Welfare. (4) Four hours of lecture and one hour of discussion per week. Course brings together the methods of historical analysis and the problems faced by social welfare professionals to create a new and provocative examination of children and childhood in America. Topics covered will include childhood and infancy, children’s rights, learning, and the state of the superparent. A significant research paper is required. Also listed as History C129 and Undergraduate Interdisciplinary Studies C132. (F,SP) Staff

C151. Asian Americans: Cultural, Psychological, and Social Work Perspectives. (2) Two hours of lecture/discussion per week. Course provides an overview of the Asian American experience from a psychological perspective. Examines Asian American cultural values, the process of psychological adaptation, ethnic identity formation, implications for social work practice, and culturally sensitive service delivery and treatment. Also listed as Psychology C137.

H195. Senior Honors Course. (1-3) Course may be repeated for credit. Individual consultation. Prerequisites: 100. Preparation of an honors thesis. (F,SP) Staff

197. Field Studies in Social Welfare. (1-3) Field work in community agencies and independent conferences with faculty. Must be taken on a passed/not passed basis. Supervised experience relevant to specific aspects of social welfare in off-campus organizations. Regular in-person meetings with the advisor and written reports required. (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 basis. 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 conference. Must be taken on a passed/not passed basis. Enrollment is restricted by regulations specified in the General Catalog. (F,SP) Staff

**Graduate Courses**

200. Human Behavior and the Social Environment. (2) Two hours of lecture per week. The psychological, interpersonal, and social development of the person across the life cycle in the context of different social environments. (F) Runyan, Stone

205. Psychosocial Problems and Psychopathology. (2) Two hours of lecture per week. Developmental abnormalities and deviations which result in
dysfunctional behavior in the individual. Examines problems and disorders of children and adults from psychological and social perspectives. (F) Gambrill, Or-

210A. Stress and Coping in Adulthood. (2) Two hours of lecture per week. Prerequisites: 200. Descri-
scriptions and major theories con-
cerning the etiology of stress 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 in-
fant development, including infant mental health, par-
ent-child relationships, behavior assessment, predi-
tors of disturbance, and intervention with high risk infants. (SP) Ivens

210C. Aging Processes. (2) Two hours of lecture per week. Prerequisites: 200. Focus on the personal community—those significant others available to render assistance in times of physical or emotional strain. How networks operate; their ac-
complishments and limitations; the role and skills of professionals in assessing and utilizing networks for clients. (SP) Robinson

210D. Life Histories and Case Studies. (2) Two hours of lecture per week. Prerequisites: 200. Theo-
retical and methodological problems in the study of in-
dividual lives. Focus on the intellectual and social pro-
cesses involved in the formulation, critical examination, and re-
formulation of clinical case studies and psychody-

C210H. Perspectives in Personality: Personality Theory. (2) Two hours of seminar per week. Major ap-
proaches to personality theory, including psychody-
namic, behavioral, psychometric, and humanistic the-
ory, as well as work in culture and personality, the
study of lives, and feminist psychology. Analysis of rel-
betions between the life, work, and social-historical con-
text of Freud, Skinner, Rogers, Eysenck, Margaret
Mead, and others, with attention to the origins, course, and (on occasion) fall of each tradition. Also listed as Psychology C250E.

210L. Group, Organizational, and Community Dy-
namics. (2) Two hours of lecture/discussion per week. Course examines theories of group, organization, and community development. Theories include group leadership and decision-making, organizational goals, structure, and change, and community power and demograph-
ics. (F) Austin

220. Introduction to Social Welfare Policy. (2) Two hours of lecture per week. Analysis of issues in social welfare policy and the trends shaping the develop-
mement of the American welfare state. (F) Gilbert

222. Mental Health and Social Policy. (2) Two hours of lecture per week. Mental health policies and pro-
grams at the national, state, and local levels; major fac-
ors influencing the provision of mental health services; reciprocal relationships between mental health policy and social work practice. (SP) Segal

223. Advanced Seminar in Community Mental Health. (2) Two hours of seminar per week. Pre-
requi-
tes: 222. Seminar examines critical policy and prac-
tice issues affecting 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 know-
l edge required to assess the needs for societal sup-
ports and major issues and trends in the delivery of so-

230. Social Policy: Children and Families. (2) Two hours of lecture per week. Introduction to current prob-
blems, programs, and policies in child, youth, and fam-
ily welfare. (SP) Beck

232. Social Work and Education Policy. (2) Two hours of lecture/discussion per week. This course ex-
namines the intersection between social work practice and the educational system. It focuses on the school as a social system and the current policy context of ed-
ucation. It presents current topics in educational policy and critically analyzes them from a social work per-

F. Stone

234A. Law and Social Welfare: Children and Fam-
ilies. (2) Two hours of lecture per week. Legal in-
formation 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. Addresses major legal issues in Health and Mental Health encountered by social workers. Topics include reproductive rights, AIDDS, right to treatment. (F) Staff

234C. Legal Issues in Aging. (2) Two hours of lec-
ture/discussion per week. Legal information, policy dis-

235. Homelessness in America. (2) Two hours of lecture/discussion per week. This course addresses the uniqueness of homelessness in the life experiences of the poor. It considers the legal, social, and economic context of homelessness; examines the diversity of the homeless, their special needs, handicaps, and be-
haviors; and explores the systems of care and treatment. The course looks at home-
lessness 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 per-

238B. Drug and Alcohol Policy. (2) Two hours of lec-
ture per week. Examines how substance abuse policy is formulated by examining political, historical, epi-

238C. Health Policy—A Social Welfare Perspective. (2) Two hours of lecture per week. Reviews major is-

240. Introduction to Social Welfare and the Pro-

241. Legal and Social Welfare: Health and Mental Health. (2) Two hours of lecture/discussion per week. Addresses major legal issues in Health and Mental Health encountered by social workers. Topics include reproductive rights, AIDS, right to treatment. (F) Stone

243. Direct Practice in Child and Family Settings. (2) Two hours of lecture/discussion per week. Pre-
requi-
tes: 210C. Direct intervention models for ad-

244. Direct Practice in Mental Health Settings. (2) Two hours of lecture/discussion per week. Pre-
requi-
tes: 210C. Direct intervention models for ad-

246. Direct Practice in Aging Settings. (2) Two hours of lecture/discussion per week. Prerequisites: 210C. Comprehensive assessment of the elderly, nor-
mal age-related changes, the aging process; and the range of direct intervention models for working with the elderly. (SP) Scharlach

250A. Social Work with Groups. (2) Two hours of lecture per week. Prerequisites: 241. Theory and prac-
tice regarding the formation, sustenance, and termi-
nation of groups. Emphasis on the role of the social worker in facilitating inter-personal processes in groups. Grossman

250B. 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. Ex-

250G. Psychodynamically Oriented Social Work Practice with Adults. (2) Two hours of lecture/dis-
cussion per week. Prerequisites: 241. Course ex-

250K. Social Work and Disability. (2) Two hours of lecture/discussion per week. Uses a theoretical frame-
work grounded in the values of self-determination, dig-

250L. Social Work and Human Sexuality. (1,2) One hour of lecture/discussion per week per unit. Pre-
requ-

250M. Death and Dying. (2) Two hours of lecture/ seminar per week. This course explores death and dy-

250S. Social Work and Human Sexuality. (1,2) One hour of lecture/discussion per week per unit. Pre-
requ-

250T. Social Work and Human Sexuality. (1,2) One hour of lecture/discussion per week per unit. Pre-
requ-

250U. Social Work and Human Sexuality. (1,2) One hour of lecture/discussion per week per unit. Pre-
requ-

250W. Social Work and Human Sexuality. (1,2) One hour of lecture/discussion per week per unit. Pre-
requ-

250X. Social Work and Human Sexuality. (1,2) One hour of lecture/discussion per week per unit. Pre-
requ-

250Y. Social Work and Human Sexuality. (1,2) One hour of lecture/discussion per week per unit. Pre-
requ-

250Z. Social Work and Human Sexuality. (1,2) One hour of lecture/discussion per week per unit. Pre-
requ-
dying persons and their loved ones, as well as the interplay between the process of dying and the process of living. Implications for social work interventions are discussed. This course is both academic and experiential. The variety of materials includes autobiography, fiction, scholarly and theoretical writings, case examples, films, poetry, and guest lectures. Scharfach

250A. Public Child Welfare Services. (1) Two hours of lecture/seminar every week. Prerequisites: 241. First part of two-semester course designed for students preparing for careers in public child welfare. Fall term examines continuum of services, common clinical case management themes, impact of chemical dependency and domestic violence, decision making and intervention models, and the practice of social work within the legal context of the dependency court. (F) Gilson

250B. Public Child Welfare Services. (1) Two hours of lecture/seminar every week. Prerequisites: 241, 250A. Second part of two-semester course designed for students preparing for careers in public child welfare. Spring term addresses the range of documented requirement for legal purposes, practice issues for social workers within the court setting, and skills required in presenting testimony. (SP) Gilson

250P. Child Psychopathology: Issues in Assessment and Treatment. (2) Two hours of seminar per week. Prerequisites: 205, 241. Course surveys assessment and empirically based treatment approaches to various psychosocial problems in childhood and adolescence. The emphasis is placed on internalizing and externalizing disorders. Course is taught using a development psychopathological framework. Students must possess a working knowledge of DSM-IV-TR nosology. (SP) Stone

250R. Social Work with Adolescents. (2) Two hours of lecture/discussion per week. Prerequisites: 241. Course will focus on the methods for the assessment and treatment of disturbed and delinquent adolescents. Psychosocial, psychodynamic, sociocultural and ecological perspectives will be examined. A variety of early intervention and treatment modalities will be explored.

250T. Social Work Practice in School Settings. (2) Two hours of 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 in social work practice in schools, including individual intervention with children, family intervention, building links between families and school staff, advocacy, classroom-based intervention, and collaboration; 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. Prerequisites: 241. Course provides an introductory overview of various theories and methodologies currently used in the diagnosis and treatment of substance abuse disorders. Though the bulk of the course is devoted to the disease model and corresponding interventions, some attention will be given to prevention and epidemiology. Emphasis will be placed on the unique practice role of social work in the prevention/intervention of substance abuse problems. Manoleas

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. The course focuses on the development of 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 and implementation, relations with community groups, staff development, supervision, training and finance. (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. Prerequisites: 241. Policy Practice introduces students to the legislative process and lobbying, testing, voter registration, lobbying, testifying, work 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 agencies and organizations, including decision-making, understanding 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 in social work practice in schools, including individual intervention with children, family intervention, building links between families and school staff, advocacy, classroom-based intervention, and collaboration; 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

257. Financial Management. (2) Two hours of lecture/discussion per week. Formerly 298. This course provides both theoretical knowledge and practical skills necessary to manage resources in social service organizations. Students will learn tools and techniques for effective planning and budgeting as well as how to design information systems to control, evaluate, and revise plans. Budgeting and systems will be examined from a management perspective with an emphasis on designing systems to meet the unique management information needs of different organizations. The emphasis is placed on internal and external financial statements will be covered. Students will learn the tools and techniques of financial statement analysis, interpretation, and presentation. The course is designed to provide core financial management skills needed by senior and middle managers in large and small social service organizations. (SP) Courtney

260. Access to Human Services Among Low Income and Minority Populations. (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 difficult circumstances. The course examines the unique impact of policy on outcomes to the U.S. and the circumstances newcomers and their families face once here. (SP) Snowden

270. Community Organizing. (2) Two hours of lecture/discussion per week. Introduction to the theory and practice of community organization. Albany

275. Community Organizing. (2) Two hours of lecture/discussion per week. Introduction to the theory and practice of community organization. Albany

280. Introduction to Social Welfare Research. (2) One hour of lecture and one hour of discussion per week. Problem formulation, design, and implementation. (F) Austin

282A-282B. Seminar in Social Welfare Research. (2;2) Two hours of seminar per week. Prerequisites: 280. Problem formulation, design, and implementation. (F) Staff

285A-285B. Statistics for Social Workers. (1;1) Two hours of laboratory/discussion per week. Prerequisites: To be taken concurrently with Public Health 142A-142B. Foundation and theory underlying introductory statistical methods. Course focuses on statistical applications in areas of social welfare. (F) Staff

286. Statistical Analysis Using the Computer. (1) Two hours of lecture per week for eight weeks. Must use a satisfactory statistical software package. Prerequisites: 285A or 285B. Statistical Analysis Using the Computer introduces to computer-based statistical analysis and research methods. Course emphasizes the practical application of statistical methods and techniques in social work research. Focus on general linear models, specifically linear regression, analysis of variance, correlation, partial correlation, and analysis of covariance. (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 library research in social welfare, including reference works, bibliographic aids, and computer databases. Individual faculty members will represent different research methodologies, outcomes, and contributions to social welfare. (F) Staff

289. Research Methods and Techniques in Social Welfare. (2) Two hours of lecture per week. The logic of social research: topics include rationale and procedures of research design, validity, reliability, and an introduction to sampling. (F) Staff

290. Introduction to Regression. (3) Four hours of lecture/discussion per week. Prerequisites: Public Health 142A-142B or equivalent. Course addresses strengths and weaknesses of both linear and nonlinear regression analysis. Problems, detection, and treatment are explored in a lecture/discussion/"hands-on" computer laboratory format.

295. Dissertation Seminar. (2) Two hours of seminar per week. The purpose of this seminar is 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 design. (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 graduate 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

297. 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 graduate work. (F,SP) Staff

299. Departmental Colloquium. Two hours of colloquium per week. (F,SP) Staff

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, and introduces pedagogical theories and critical pedagogy. The second part of the course explores the practice of 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...
3.5 grade-point average in the major may apply to the honors program, after conferring with a major adviser. Students will be required to submit a thesis proposal as part of their application and are encouraged to take advanced methodology courses such as Sociology 105, 106, or 107A/B/C. Spring of the junior year in preparation for conducting research for their honors thesis. Students earn honors by meeting the minimum 3.5 grade-point average for honors and by successfully completing Sociology H190A-190B, Senior Honors Thesis and Seminar.

Students who plan to go on to graduate work in sociology or other related disciplines and professions or who plan to participate in the senior honors seminar are strongly urged to take Sociology 105, 106, or 107A-107B.

### Lower Division Courses

**1. Introduction to Sociology.** 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 courses, but not for majors.

**2. Sociology 1, 101A, and 101B must be completed with at least a C-grade.** Sociology course must be completed at the time of declaration. Sociology 5, 101A, and 101B must be completed before or 107A-107B.

**3. Principles of Sociology.** Students who plan to go on to graduate work in sociology or other related disciplines and professions or who plan to participate in the senior honors seminar are strongly urged to take Sociology 105, 106, or 107A-107B.

### The Graduate Program

Information about the graduate program and admissions may be obtained from the departmental office, 410 Barrows Hall, several weeks before the beginning of each semester.

### Courses

For more detailed information about the courses that follow, course descriptions are available in the departmental office, 410 Barrows Hall, several weeks before the beginning of each semester.

**1. Introduction to Sociology.** 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 courses, but not for majors.

**3. Principles of Sociology.** Students who plan to go on to graduate work in sociology or other related disciplines and professions or who plan to participate in the senior honors seminar are strongly urged to take Sociology 105, 106, or 107A-107B.

### Sociology (College of Letters and Science)

**Degree Office:** 410 Barrows Hall, (510) 642-4766 http://sociology.berkeley.edu/

**Chair:** Michael Burawoy, Ph.D. University Professor Emeritus

**Professors**

- Victorica E. Bonnell, Ph.D. University Professor Emeritus, Historical, labor, Russian society
- H. Montgomery, Ph.D. University of Chicago, Labor, comparative, economic policy
- Nancy J. Chodorow, Ph.D. Brandeis University, Feminist theory, family dynamics, leadership, social policy
- Peter Evans, Ph.D. Harvard University, Comparative development, Latin America, state and industrialization
- Claude S. Fischer, Ph.D. Harvard University, Urban networks, history, technology
- Neil Fligstein, Ph.D. University of Wisconsin, Social stratification and class, methodology and statistics, complex organizations
- Leo A. Goodman (Class of 1883 Professorial Chair), Ph.D., D.Sc. (Honorary), Statistical mathematical methods of social sciences
- Arlie R. Hochschild, Ph.D. University of California, Berkeley, Family gender, social psychology
- Michael Harrington, Ph.D. Brandeis University, Demography, methods, occupations, stratification
- Jerome Karabel, Ph.D. Harvard University, Education, stratification, ideological bases
- John Lie, Ph.D. Harvard University, Social theory, political economy
- Kristin Luker, Ph.D. Yale University, Gender, population, medicine
- Trond K. Petersen, Ph.D. University of Wisconsin, Career systems, payment systems, organizational behavior
- Martin Sacerdoti, Ph.D. Massachusetts Institute of Technology, Deviance, political, urban, youths
- Ann Swidler, Ph.D. University of California, Berkeley, Culture, religion, theory, organizations
- Barrie Thorne, Ph.D. Brandeis University, Gender, theory, childhood
- Kim Voss, Ph.D. Stanford University, Labor, movements, historical methods
- Loo C. Waiquant, Ph.D. University of Chicago, Race, ethnicity and class: urban inequality: culture and economy
- Margaret Weir, Ph.D. University of Chicago, Political sociology
- H. Franz Schurmann, Ph.D. University of California, Berkeley, Race and ethnicity
- Jerome Karabel, Ph.D. Harvard University, Education, stratification, ideological bases
- John Lie, Ph.D. Harvard University, Social theory, political economy
- Kristin Luker, Ph.D. Yale University, Gender, population, medicine
- Trond K. Petersen, Ph.D. University of Wisconsin, Career systems, payment systems, organizational behavior
- Martin Sacerdoti, Ph.D. Massachusetts Institute of Technology, Deviance, political, urban, youths
- Ann Swidler, Ph.D. University of California, Berkeley, Culture, religion, theory, organizations
- Barrie Thorne, Ph.D. Brandeis University, Gender, theory, childhood
- Kim Voss, Ph.D. Stanford University, Labor, movements, historical methods
- Loo C. Waiquant, Ph.D. University of Chicago, Race, ethnicity and class: urban inequality: culture and economy
- Margaret Weir, Ph.D. University of Chicago, Political sociology
- H. Franz Schurmann, Ph.D. University of California, Berkeley, Race and ethnicity
- Jerome Karabel, Ph.D. Harvard University, Education, stratification, ideological bases
- John Lie, Ph.D. Harvard University, Social theory, political economy
- Kristin Luker, Ph.D. Yale University, Gender, population, medicine

**Affiliated Professors**

- Lauren B. Edelman, Ph.D. Stanford University, Law and society, social organization
- W. Russell Ellis, Jr., Ph.D. University of California at Los Angeles, Social factors in labor markets
- Samuel R. Lucas, Ph.D. University of Wisconsin, Social stratification, education, research methods
- James R. Lincoln, Ph.D. University of Wisconsin, Organization theory, Japanese management, organizational networks
- Philippe Neron, Ph.D. Jurisprudence, sociology of law (Law)
- Michael A. Omi, Ph.D. University of California, Santa Cruz, Race and ethnicity (Ethnic Studies)
- Stephen M. Shотell, Ph.D. University of Chicago, Medical sociology, organizations (Public Health)
- Charis Thompson, Ph.D. University of California, San Diego, Sociology of science (Rhetoric and Women's studies)
- Harold L. Wilensky, Ph.D. University of Chicago, Work, politics, modern society (Political Science)
- John R. Willmoth, Ph.D. Princeton University, Social demography (Demography)

**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 1, Sociology 5, as well as a course in either statistics or logic. Students may declare as soon as they have enrolled in their last prerequisite. At least one sociology course must be completed at the time of declaration.

Students are required to have a 2.0 grade-point average both cumulative and in the major to be eligible to declare the major.

**Upper Division.** A student must take the following courses:

2. Three courses from the following core list: 110, 111, 112, 113, 115, 116, 125 (or 125AC), 130, 151A (or 151AC), 131A (or 131AC), 133, 140, 141, 150, 160, 170, (or 170AC), 171, 172.
3. Three additional division courses which may be upper division sociology courses numbered 101C-196, or graduate sociology courses (subject to instructor approval). Courses taken from the core list in excess of the three required, or additional upper division seminar courses, will count as electives, as will non-core courses.

Sociology 5, 101A, and 101B must be completed with at least a C-grade.

**Honors Program.** Majors who enter their senior year with a 3.5 grade-point average overall and a 3.5 grade-point average in the major may apply to the honors program, after conferring with a major adviser. Students will be required to submit a thesis proposal as part of their application and are encouraged to take advanced methodology courses such as Sociology 105, 106, or 107A/B/C. Students must have applied for honors and must be accepted for honors after a junior year in preparation for conducting research for their honors thesis. Students earn honors by meeting the minimum 3.5 grade-point average for honors and by successfully completing Sociology H190A-190B, Senior Honors Thesis and Seminar. Students who plan to go on to graduate work in sociology or other related disciplines and professions or who plan to participate in the senior honors seminar are strongly urged to take Sociology 105, 106, or 107A-107B.

### The Graduate Program

Information about the graduate program and admission requirements may be obtained from the departmental office, 410 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, 410 Barrows Hall, several weeks before the beginning of each 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: Priority given to freshmen and sophomores. Freshmen 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 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 the crucial second year. The topics vary from department to department and semester to semester. Enrollment limited to 15 sophomores. (FSP)

98. Directed Group Study. (1-4) Course may be repeated for credit. One to four hours of independent study may be taken on a passed/not passed basis. Prerequisites: Consent of Instructor. Group studies of selected topics which vary over time. (FSP)

Upper Division Courses

100. In the Sociology Workshop. (1) One hour of prosemouse per week. Must be taken on a passed/not passed basis. Prerequisites: Declared sociology major. In this prosemouse students will become familiar with faculty and their various re-search interests. It consists of presentations by faculty 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 or 101B or consent of instructor. A systematic study of the work of noted social theorists of the post-WWII era. This course will concern the course of social thoughts and social theories. (SP)

101C. Contemporary Sociological Theory. (4) Three hours of lecture per week. Prerequisites: 101A-101B or consent of instructor. A study of the major schools of thought in sociology. (FSP)

102. Advanced Study in Social Theory. Three hours of lecture per week. Prerequisites: A course in social theory or consent of instructor. Courses under this number involve pursuing study in subfields of sociological theory. The student must take a general background in social theory. Consent of instructor is needed to whether your background is appropriate.

105. Introduction to Sociological Methods. (5) 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 issues in quantitative re-search 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) Goodman

107A. Field Research: Participant Observation. (4-5) Three hours of lecture per week. Credit and grade to be awarded on completion of sequence. This course gives students both substantive background and practical training in the field method. The first semester will be classroom based to introduce the method. In the second semester students will put the method into practice as they are sent to the field to gather data for the Center for Ethnography’s Bay Area Study. During the fieldwork students will participate in a bi-weekly seminar and work under the guidance of the professor to address issues that arise in the field. Sanchez-Jankowski

110. Organizations and Institutions. (4) Three hours of lecture and two hours of discussion per week. Prerequisites: 1, 3, 3AC 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, 3, 3AC or consent of instructor. An introduction to the family, its structure and functions; male-female role contrasts, 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.

118. Selected Topics in Sociology of Family and Childhood. (4) Three hours of lecture per week. Prerequisites: 1, 3, 3AC or consent of instructor. The focus of the course will vary depending on the instructor and the course charge. Possibilities include cultures of caregiving, the sociology of childhood, and the sociology of childcare. (FSP)

119. Society and Information Technology. (4) Three hours of lecture per week. Prerequisites: 1, 3, 3AC, or consent of instructor. This course is aimed at undergraduate students of all backgrounds. It studies the interaction between society and contemporary information technologies in a comparative and multicultural perspective. Using information technology as an entry point, this course provides a systematic understanding of social structure and social change in our time. Some topics covered might include knowledge of information technology since the 1700s, the new global economy, digital divides, immigration, electronic democracy, gender relations in the information society, and the transformation of work and employment.

120. 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 explore the sociology of poverty. It will examine a number of theories on the nature, causes, consequences of world urbanization; metropolitan areas; location and types of cities, social and demographic characteristics of urban populations. (FSP)

125AC. Urban Sociology. (4) Three hours of lecture and two hours of discussion per week. Prerequisites: 1 or 3 or 3AC or consent of instructor. Analysis of social and demographic characteristics of urban populations. (FSP)

125B. Urban Sociology. Three hours of lecture and two hours of discussion per week. Prerequisites: 1 or 3 or 3AC or consent of instructor. Analysis of social and demographic characteristics of urban populations. (FSP)

126 in 125 may be removed by taking 125AC, but a deficiency in 125AC cannot be removed by taking 126. No credit for 126 after 125AC. Sociology of urban populations. 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. (FSP) Sanchez-Jankowski

126. Sociology of Poverty. (4) Deficiency in 124AC cannot be removed by completing 124. No credit for 124 after 124AC. Sociology of poverty. (FSP)
128. Society and the Environment. (4) Students may remove a deficiency in 128B 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 germfree the biological world is to our lives. This course explores the relational dynamics 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 micro-level local communities, to early modern, to the present. We examine the relationship between society and the environment, and the environmental impacts of late capitalism.

128AC. Environmental Justice: Race, Class, Equity, and the Environment. (2) 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 are examined in the framework of historical changes 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, and government responses, and future strategies for achieving environmental and labor justice. Also listed as Environ 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 class organizations.

131A. Race and Ethnic Relations: The United States Experience. (4) Deficiency in 131AC cannot be removed by completing 131A. 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 Afro-Amer-

131B. Race and Ethnic Relations: International Comparisons. (4) 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 with the United States. Emphasis on: social, economic, political, institutional, social psychological, and demographic processes.

132. Race and Ethnic Relations: Selected Topics. (4) This course may be repeated for credit as topic varies. No credit for 132 after taking 132AC. Deficiency in 132AC may not be removed by taking 132. Three hours of lecture per week. Prerequisites: 1 or 3 or 3AC or consent of instructor. There will be variation in focus of attention, depending on instructor in charge. Topics may include concentration on one ethnic group, consideration in depth of specific theoretical issues, or an examination of race relations from an international comparative approach.

133. Sociology of Gender. (4) Three hours of lecture per week. Prerequisites: 1 or 3 or 3AC or consent of instructor. Historical and comparative theories of gender and gender relations. Exploration of key institutional forms such as family, state, and workplace through feminist theory. Students can 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 women's roles in the U.S.; Muslim women in comparative perspective.

135. Sexual Cultures. (4) Three hours of lecture per week. Prerequisites: 1 or 3 or 3AC or consent of instructor. This course examines how sexual identities, communities, desires, and practices are socially, historically, and culturally constructed. We will look at how sexualities are organized in the world—how we understand them as we build on existing studies of sexuality. Emphasis on theoretical texts, we will trace the paradigm shift from late 19th century sexology to early 20th century psychoanalysis, through a variety of approaches to the study of sexuality. Examples of possible topics: gender and the state; sexuality, age, race/ethnicity, and nationality. (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. Study of the relationship between society and 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, ideology, 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 and play of public opinion, and the behavior of interest groups.

144AC. Ethnic Politics. (4) No credit for 144AC after taking 144. Deficiency in 144 may be removed by taking 144AC. Three hours of lecture per week. Prerequisites: 1 or 3 or 3AC or consent of instructor. Analyzes the role that race and ethnicity plays in American politics by examining the experiences of both white and non-white groups. We will begin by looking at the development of race and ethnicity as salient political issues in American society. Next, we examine how various ethnic groups have been socialized into the political system and we investigate the patterns of ethnic political leadership. This course satisfies the American cultures requirement. (F-SP) Barlow

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 social cognition, social identity, social identity and group psychology, social psychological explanations, cognitive theories, interpersonal processes and theories of exchange. (F,SP)

151. Personality and Social Structure. (4) Three hours of lecture per week. Prerequisites: 1, 3, 3AC or consent of instructor. This course investigates the relations of psyche, culture, and society, drawing on writings of psychoanalysts and social and cultural theorists who use psychoanalytic approaches. Major topics include how inner life helps to shape social experience and social meaning as well as popular theories of personality and identity; psychoanalytic methodologies in the social sciences; and psychoanalytic social critique and visions of subjectivity.

155. Sociology of Illness and Medicine. (4) Three hours of lecture per week. Prerequisites: 1 or 3 or 3AC or consent of instructor. Study of multiculturalism—are central dimensions of social and cultural factors associated with the definition, occurrence, and experience of illness. Analysis of the socially defined “sick role” and the systems of which it is a part.

156. Thought Reform, Influence and Social Control. (4) Three hours of lecture per week. Prerequisites: 1 or 3 or 3AC or consent of instructor. Thought reform (i.e., coercive persuasion, brainwashing) and extreme methods of social control in the Soviet Union, China, and in American cult organizations are analyzed. 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 major changes in modern societies: the sources of these changes, the processes through which they spread; their meaning for individuals and institutions. (F,SP)

170AC. Social Change. (4) Three hours of lecture per week. Prerequisites: 1 or 3 or 3AC or consent of instructor. Study of major changes in modern societies: the sources of these changes, the processes through which they spread; their meaning for individuals and institutions. (F,SP)

170B. Social Change. (4) Students may remove a deficiency in 170B by taking 170AC but a deficiency in 170AC cannot be removed by taking 170. Students will not receive credit for 170 after taking 170AC. Two hours of lecture per week. Prerequisites: Sociology 1, 3, or 3AC. This course will seek to explain the formation of modern United States society by 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— and movements against racism and nationalism and for 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 works of scholarship in the field of historical sociology, the nature and meaning of such topics as revolution, transformation of social structure, social life, political authority, institutions and culture viewed from an historical and comparative perspective.

172. Development and Modernization. (4) Three hours of lecture and one hour of discussion per week. Prerequisites: 1 or 3 or 3AC or consent of instructor. Comparative analysis of socio-economic and political change, focusing on the poor countries of Asia, Africa, and Latin America. Offers both a basic descriptive understanding of processes of change in these countries.
and an introduction to major theoretical perspectives on development and globalization.

180. American Society. (4) Three hours of lecture per week. Prerequisites: 1 or 3 or 3AC or consent of instructor. This course explores the ways that contemporary American society is different than other societies and different than American society in earlier periods. (F,SP)

C183. China in the 1990s: Reporting the Contradictions. (4) Students will receive no credit for Sociology C183 after taking Sociology 183. Three hours of lecture and one hour of discussion per week. Prerequisites: 1 or 3 or 3AC or consent of instructor. Formerly 183. This interdisciplinary course applies sociological methods to understand the dramatic social consequences of the economic reforms underway in China since 1979 while examining 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/state-society relations; decolonization of the rural economy; ownership reform in the urban economy; and realization of the urban residence control system. Journalistic problems include how do media report these issues, censorship, and secrecy affect professional news gathering; and influences on news agendas. Also listed as Journalism C183. Gold. Wakeman

187. Social Change in Central America. (4) Three hours of lecture per week. Prerequisites: 1 or 3 or 3AC or consent of instructor. This course will introduce students to the origins and nature of social change in contemporary Central America. A socio-historical approach will be used to describe the region’s development, which will lay the groundwork for understanding the emergence in recent decades of movements promoting social change there. While focusing particularly on Central America, the course will also provide the theoretical and analytical tools required to comprehend social change elsewhere in the Third World.

189. Selected Topics in Area Studies. (4) Course may be repeated for credit as topic varies. 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 concentration on one society or a particular aspect of one society, consideration in depth of specific theoretical and methodological issues involved in area studies, or comparative regional studies.

190. Seminar on Advanced Topics. (4) Course may be repeated for credit as topic varies. Two hours of seminar per week and individual conferences. Prerequisites: Restricted to senior honors candidates with suitable preparation (see description of major). Intensive study of individual topic to provide background for honors thesis which is composed of the second semester of the sequence. Group and individual conferences.

H191. The World of Sociological Research. (1) One and one-half hours of seminar per week. Must be taken on a passed/not passed basis. Prerequisites: Enrollment in sociology department’s senior 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 attendance at weekly departmental colloquia. Students will prepare for each colloquium by reading written work by the speaker and will follow up with a response paper.

C196W. Special Field Research. (10.5) Course may be repeated for a maximum of 12 units. 240-300 hours of fieldwork, plus regular meetings with the faculty supervisor. Prerequisites: Consent of instructor. Formerly C196W. Students work to 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 produce a final paper for the course consisting of no fewer than 30 pages. Other restrictions apply; see faculty adviser. Also listed as History of Art C196W, Undergraduate Interdisciplinary Studies C196W, Women’s Studies C196W, Mass Communications C196W, Political Science C196W, History C196W, and Political Economy of Industrial Soci 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 aspects of sociology in off-campus organizations. Regular 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)

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 will make 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, 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 identify the recurrent 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. Particular theorists or 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 Course Work. 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 of the department in which the student is supervised, 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: 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), 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 laboratory 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 inquiry, experimental research, and survey analysis. The first semester concentrates on techniques for gathering 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. Possible topics include: analysis of qualitative/categorical data; loglinear models and latent-structure analysis; the analysis of cross-classified data having ordered and unordered categories; measurement, models, and graphical displays in the analysis of cross-classified data; correspondence analysis, association analysis, and related methods of data analysis. Also listed as Statistics C281.

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.

273D. Quantitative/Statistical Research. (3)

273E. Participant Observation. (3)

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 prepare students 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. Religion. (3)
280J. 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)
280V. Sociology of the Information Society. (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 contexts. 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 integrationist reading of migration, in particular transnational and models of postnational citizenship.

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 to the job presentation talk. We will be especially concerned with reflexive 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 on professional writing for sociologists. We will focus on editing, rewriting, and editing, and re-writing seminar members' 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, journals, 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. Fischer

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. Must be taken on a 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. Individual study, hours vary. 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 study 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. For students engaged in individual research and study. May not be substituted for available graduate lecture courses or 290. (F,SP)

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. Prerequisites: Consent of instructor. Individual study for the master’s requirements in consultation with the adviser. Units may not be used to meet either unit or residency requirements for the master’s degree. (F,SP)

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 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 residency requirements for the doctoral degree. (F,SP)

Professional Courses

301. Professional Training: Teachers. (3-6) Course may be repeated for credit. Units may not be used to meet unit or residence requirements for either the master’s or doctoral degree. Must be taken on a satisfactory/unsatisfactory basis.

401. 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 residence requirements for either the master’s or doctoral degree.

Sociology and Demography
(College of Letters and Science)

Group Office: 2232 Piedmont Avenue, (510) 642-9800 http://www.socdemo.berkeley.edu/gradprograms/socdemo.html
Chair: Michael Hout, Ph.D.
Faculty
Irene Bloom, Ph.D. (Sociology)
Michael Hout, Ph.D. (Sociology)
Jennifer Johnson-Hanks, Ph.D. (Demography)
Ronald D. Lee, Ph.D. (Demography)
Samuel L. Hays, Ph.D. (Sociology)
Kristin Luker, Ph.D. (Sociology)
Jane Maudlin, Ph.D. (Goldman School of Public Policy)
Kenneth Wachter, Ph.D. (Demography)
John W. Wilmot, Ph.D. (Demography)
Affiﬁed Faculty
Claude Fischer, Ph.D. (Sociology)
Leo Goodman, Ph.D. (Sociology)
Eugene Hammel, Ph.D. (Demography)
Tord Petersen, Ph.D. (Sociology)
Steve Raphael, Ph.D. (Goldman School of Public Policy)

Graduate Adviser: Ms. Johnson-Hanks.

Program Overview

The Graduate Group in Sociology and Demography (GGSD) is an interdisciplinary training program in the social sciences designed for students with broad intellectual interests. Drawing on Berkeley’s Department of Sociology and Department of Demography, the group offers students a rigorous and rewarding intellectual experience.

The group, founded in 2001, sponsors a single degree program leading to a Ph.D. in sociology and demography. The GGSD helps foster an active intellectual exchange between graduate students and faculty in the two disciplines. In addition, faculty and students associated with the group often maintain close ties with other disciplines both inside and outside the social sciences (for example, economics, anthropology, statistics, public health, biology, and medicine).

The specific emphasis of this academic program is the intersection of the fields of sociology and demography. Potential areas of study include, but are not limited to, population history, social stratification, inequality, race, ethnicity, causes and consequences of population growth, the demographic transition, population-environment interactions, economic development, immigration, globalization, gender, family, kinship, child welfare, sexuality, inter-generational relations, aging, mortality, health care, disability, fertility, family planning, birth control.

Students in the GGSD typically earn both an M.A. in sociology and an M.A. in demography en route to the Ph.D. in sociology and demography. Students already enrolled in another graduate program at Berkeley who wish to earn a Ph.D. in sociology and demography may apply by executing a change of major. Students not already enrolled at Berkeley who wish to enter the Ph.D. program should apply to the group chair. General deadlines for application specified by the Graduate Division apply, as do the general requirements of the Academic Senate and the Graduate Division for Ph.D. degree programs.

Program Requirements

Ph.D. degree requirements include approximately 43 units of course work drawn primarily from the departments of demography and sociology, plus electives from other departments (specific degree requirements are available from the graduate adviser); an M.A. research paper in sociology; a preliminary examination in demographic methods and substance; a foreign language examination; an oral qualifying examination covering four fields of study (sociological theory, general demography, and two specialized fields); and a Ph.D. dissertation. For details, see the graduate adviser.
South and Southeast Asian Studies

(Ph.D. and M.A.)

South and Southeast Asian Studies
(College of Letters and Science)

Department Office: 7233 Dwinelle Hall, (510) 642-4564
Fax: (510) 642-3500
Chair: Vasudha Dalmia, Ph.D.
Vice Chair: George Hart, Ph.D.

Professors

Barend A. van Nooten, Ph.D. Florida State University. Feminist theory, contemporary literary theory.
Bruce R. Pray, Ph.D. University of Pennsylvania. Sanskrit, grammar, linguistics, paleography.
Joanna Williams, Ph.D. Harvard University. Indian and Southeast Asian art.
James Matisoff, Ph.D. University of California, Berkeley. Southeast Asian languages, especially Tibetan, Burmese and Thai, Chinese, Japanese, field, area, linguistics.
Alexander von Rospatt, Ph.D. University of Hamburg. Southeast Asian languages and literatures.
Joan Scott, Ph.D. University of California, Berkeley. Southeast Asian languages, Southeast Asian politics, gender.
Sally J. Sutherland Goldman, Ph.D. University of California, Berkeley. Southeast Asian literatures, religion, politics.

Associate Professors

Caitlin P. Goldsmith, Ph.D. University of Pennsylvania. Sanskrit literature, Indian epics.
Raka Ray, Ph.D. University of California, Berkeley. Southeast Asian literatures, gender and sexuality, transnationalism, Southeast Asia.
Alexander von Rospatt, Ph.D. University of Hamburg. Southeast Asian languages and literatures.
Joanna Williams, Ph.D. Harvard University. Indian and Southeast Asian art.
P.S. Jaini (Emeritus), Ph.D. University of London. Buddhism, Jainism, Hinduism.
Aihwa Ong, Ph.D. Columbia University. Cultural politics, Southeast Asian literatures, gender and sexuality, transnationalism, Southeast Asia.

Lecturers

Vasudha Dalmia, Ph.D. Jawaharlal Nehru University. Hindi language and literature, Hindi.
Joel Fineman, Ph.D. University of Chicago. Sanskrit, comparative literature.
Mr. Hart, M.A. University of California, Berkeley. Sanskrit, linguistics.

Senior Lecturer

Vasudha Dalmia, M.A. University of California, Berkeley. Sanskrit language, Indian mythology.

Lecturers

Sally J. Sutherland Goldman, Ph.D. University of California, Berkeley. Sanskrit language, Indian mythology.
Iurma Peña Gosalvez, M.A. University of Hawaii, Manoa. Tagalog language.
Kongkrit Koonpiem, Ph.D. Chulalongkorn University, Thailand. Thai language and literature.
Nuo Lunde, M.A. University of Wisconsin, Madison. Indonesian literature.

Undergraduate Adviser: Mr. von Rospatt.
Graduate Adviser: Mr. Hart.

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 pursue 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 writing, popular and mass media, 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 encouraged to pursue courses and independent reading 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 program are flexible. Students should consult with the Program Office to discuss opportunities in the various departments and programs. Students must complete one lower-division course in either the civilization and culture of South Asia (SA 5A, 5B) 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 lower-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), for example. At least two 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 course on either the civilization and culture of South Asia (SA 5A, 5B) or the civilization of Southeast Asia (SEA 10A, 10B) and four semesters of language work in one of the following languages: Hindi-Urdu, Indonesian, Khmer, Panjabi, Sanskrit, Tagalog, Thai, and Vietnamese.

Students may establish first-year language proficiency through examinations administered by the department although passing an examination will not carry credit.

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.

For both tracks:

The major consists of 42-44 units (normally between 10 and 12 courses).

The faculty undergraduate adviser must approve all courses taken outside the department that students intend to use for credit, including courses taken in study abroad programs. Among their upper division courses, students normally will be expected to include one seminar (SSEAS 190 or an equivalent) that requires significant research and writing on South or Southeast Asia.

The Minor

The minor requirements, set by the College of Letters and Science, for the completion of a minor program are five upper division courses, of which a minimum of three must be completed at Berkeley. 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.

Seven-Course Breadth Courses


Historical Studies. SA 1A, 1B, 110A, 110B; SSEAS C110, C112; SEASIAN 10A, 10B

International Studies. SSEAS 39C; SEASIAN 10A, 10B; HIND-URD 101A, 101B

Philosophy & Values. SA 122, 127, 128, 129, 131, C140, 141, C142, 155, 160, 165


Honor 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 department 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, Malay/Indonesian, 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 history, the fine and performing arts. The analysis of cultural expression is also understood to include attention to social, anthropological, economic, and political contexts. Advanced proficiency in the language of emphasis is a central goal of study, as is the ability to undertake sophisticated textual study of a broad range of literary works in that language. The Ph.D. in South and Southeast Asian studies prepares students for academic careers in teaching and research not only in South and Southeast Asian studies, but also in comparative literature, religious studies, Asian studies, and cultural studies.

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 under the auspices of the department (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 a thesis (or a project as required by the M.A. and Ph.D. programs); a reading knowledge of a second language; and a dissertation prospectus. To be eligible for graduation, students must complete an oral qualifying examination in three approved fields (the field of emphasis, at least one secondary department, and a cognate field); submit a dissertation prospectus; advance to Ph.D. candidacy; and complete the dissertation under Plan B (see below). The Sanskrit emphasis also requires

Recipient of Distinguished Teaching Award

*Professor of the Graduate School
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 course work 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 and in the historical knowledge of place/culture; advancement to M.A. candidacy; and completion of their dissertation. 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 or, 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 double-spaced, typewritten pages, excluding footnotes and bibliography. These bibliographies are to be designed by the student's dissertation committee. The formation of the dissertation committee will take place as described in the University's Plan I (see Graduate Education). The completed dissertation must be read and approved by all three members of the student's dissertation committee. The committee may, at its discretion, require a final oral defense, to which other members of the faculty and students of the department may be invited.

The M.A. Program

This program is offered for students seeking a terminal M.A. degree or for students with limited backgrounds who are preparing for more advanced work. Emphases in the program include the languages and literatures of Hindu, Malay/Indonesian, Sanskrit, Tamil, and Urdu. The prerequisites for admission to the M.A. program are one year of study in the language of emphasis, a historical knowledge of the area of emphasis, completion of a master's thesis, advanced competence in the language of emphasis, and advancement to M.A. candidacy. The Sanskrit emphasis also requires completion of a written competency examination in Sanskrit, one course in linguistics, and reading knowledge of one additional language of scholarship in the field, normally French or German. Reading ability in the South Asian or other related foreign language (such as Latin, Greek, Old Iranian) is strongly recommended. Students are expected to complete the requirements within two years. For more detailed information about the Ph.D. consult the department web site at http://ls.berkeley.edu/dept/sseas/GraduatePro-

South and Southeast Asian

Lower Division Courses

R5A. Self, Representation, and Nation. (3) Three hours of lecture and one hour of discussion per week. Formerly 5A. This course is devoted to a study of self-representation in the literature of South and Southeast Asia. The readings will include works by authors who lived and traveled in Southeast Asia such as Joseph Conrad, George Orwell, and Somerset Maugham. Translations of works by South East Asian writers will also be examined. Such translations will be used to make comparisons and observations with which to characterize coloniality, nationalism, and postcolonial development. Prerequisites: Consent of instructor. (F,SP) Tiwon

R5B. Under Western Eyes. (4) Three hours of lecture and one hour of discussion per week. Prerequisites: 5A or course equivalent to 1A. Formerly 5B. 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 Sir Thomas Stamford Raffles, Margaret Mead, Clifford Geertz, and Benedict Anderson will be examined. Discussions will cover a broad range of theoretical issues including power, gender, and space. This course satisfies the second half of the Reading and Composition requirement. (F,SP) Tiwon

R5C. Asian Elements in Indian Art. (4) Three hours of lecture per week. Formerly 5C. This course is devoted to the study of the role of Asian elements in Indian art and culture, including South Indian (Tamil and Telugu) and Southeast Asian art. Prerequisites: Consent of instructor. (F,SP) Tiwon

R5D. Art and Architecture of South Asia. (4) Three hours of lecture per week. Formerly 5D. This course is devoted to the study of the role of art and architecture in South Asia, including South Indian (Tamil and Telugu) and Southeast Asian art. Prerequisites: Consent of instructor. (F,SP) Tiwon

R6A. Art and Architecture of Southeast Asia. (4) Three hours of lecture per week. Formerly 5A. This course is devoted to the study of the role of art and architecture in Southeast Asia, including South Indian (Tamil and Telugu) and Southeast Asian art. Prerequisites: Consent of instructor. (F,SP) Tiwon

R6B. Under Western Eyes. (4) Three hours of lecture and one hour of discussion per week. Prerequisites: 5A or course equivalent to 1A. Formerly 5B. This course is devoted to the study of the role of Asian elements in Indian art and culture, including South Indian (Tamil and Telugu) and Southeast Asian art. Prerequisites: Consent of instructor. (F,SP) Tiwon

R6C. Asian Elements in Indian Art. (4) Three hours of lecture per week. Formerly 5C. This course is devoted to the study of the role of Asian elements in Indian art and culture, including South Indian (Tamil and Telugu) and Southeast Asian art. Prerequisites: Consent of instructor. (F,SP) Tiwon

R6D. Art and Architecture of Southeast Asia. (4) Three hours of lecture per week. Formerly 5D. This course is devoted to the study of the role of art and architecture in Southeast Asia, including South Indian (Tamil and Telugu) and Southeast Asian art. Prerequisites: Consent of instructor. (F,SP) Tiwon

R7A. Introduction to the Study of Buddhism. (4) Three hours of lecture and one hour of discussion per week. This introduction to the study of Buddhism will draw on materials drawn from the Buddhist traditions of Asia, from ancient times down to the present day. However, the course is not intended to be a comprehensive or systematic survey; rather than aiming at breadth, the course is designed around key themes such as ritual, image, inscription, and death. The overarching emphasis throughout the course will be on the hermeneutical difficulties attendant upon the study of religion in general, and Buddhism in particular. Also listed as Buddhism C550. (F,SP) Staff

84. Sophomore Seminar. (1,2) Course may be re-

South and Southeast Asian

Upper Division Courses

C110. Painting of India and Pakistan, 1100-1900. (4) Three hours of lecture and one hour of discussion per week. This class will follow the development and interaction of Islamic and Jain/Buddhist/Hindu iconography under the patronage primarily of Mughal and Rajput courts. Indigenous aesthetic systems and the role of individual painters will be considered. Also listed as History of Art C136C. (F,SP) Staff

C112. The British Empire and Commonwealth. (4) Three hours of lecture and one hour of discussion per week. This course analyzes the expansion, consolidation, functioning, and eventual disintegration of the modern British Empire (from 1783). We will examine not only the development of British attitudes and policies toward empire, but such larger issues as the creation of distinctive colonial cultures, and the role empires played in the growth of Britain’s economy. We will also assess the ways the major colonial territories were affected by British rule. Also listed as History C153. (F,SP) Staff

C113. Music of India. (4) Three hours of lecture and one hour of laboratory per week. Includes the classical music traditions of both North and South India (Hindustani and Karnatak music). Also listed as Music C131A.
1.20. Topics in South and Southeast Asian Studies. (4) Course may be repeated for credit as topic varies. Three hours of lecture per week. Designed 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)

141. Introduction to Thai Literature in Translation. (4) Three hours of lecture and one hour of discussion per week. Prerequisites: One lower division South Asian course. Significant works of Thai literature in translation from the 13th century to the present day in their historical and cultural context. Students who can read Thai will be able to read several of the selections in original versions. Discussions in English. Term paper, midterm, and final examination. (F,SP) Keppner

149. Studies in South and Southeast Asian Languages. (2-4) Course may be repeated for credit as topic varies or with consent of instructor. Two to four hours of lecture per week. Directed study of South and Southeast Asian Languages. This course will provide intensive language training in languages not regularly taught by the Department. Language may vary each semester based on instructor availability. Intermediate language ability required. (F,SP)

C186. Southeast Asia. (4) Three hours of lecture per week. Prerequisites: 3 or other social science introduction course. This course examines the current political, economic, and cultural dynamism of the region. Topics include colonialism, patron-colonialism, gender relations, capitalism, and the postcolonial state. Also listed as Anthropology C186. (F,SP)

190. Seminar in South and Southeast Asian Studies. (3) Course may be repeated for credit as topic varies. Two hours of seminar 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. Topics will vary in accord with faculty and student interests. (F,SP)

H195A. South Asian Studies. (3) (F,SP)
H195C. Hindi-Urdu. (3) (F,SP)
H195E. Southeast Asian Studies. (3) (F,SP)
H195F. Sanskrit. (3) (F,SP)

198. Directed Group Study for Upper Division Students. 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.

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. 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

200A-200B. Readings in South Asian Islam. (4;4) Course may be repeated for credit. Three hours of lecture and one hour of discussion per week. The seminar will offer an opportunity to study the discourses and institutional arrangements engaging Islam and Muslims on the part of colonialists and in the colonial state, while simultaneously investigating a range of Muslim thinkers and social movements for which Islam was a significant category. Having reviewed the intellectual and institutional changes of the colonial period, we shall go on to examine the transformations that set in with Partition and the establishment of independent states. The goal of the course is both to introduce students to major secondary works in the field of modern Indo-Muslim studies, including history, anthropology, and literary criticism; and to probe a selection of primary sources, among them government documents, treatises, polemical literature, travel accounts, material representations in art and architecture, as well as imaginative fiction, poetry, and film. By making comparisons to similar issues among non-Muslims, we shall try to understand the extent and source of different patterns of change. The course may be repeated for credit if it is taught with a greater focus on the medieval period. (F,SP)

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 & Southeast Asian Studies. (2-4) Course may be repeated for credit. Three hours of lecture and one hour per 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 religions, 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 advisor. 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 doctoral degree. In individual study for the comprehensive or language requirement. (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. In individual study with the major field advisor intended to provide tailored instruction to prepare students for the Ph.D.

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. The seminar will expose GSI’s to methods and potential problems in teaching. Building a syllabus, grading, teaching writing and reading comprehension, fairness in the classroom, maintaining classroom discipline, developing a professional teaching portfolio, and campus resources for special needs students will be covered. The seminar will include periodic videotaping and feedback within each student’s classroom. (F)

South Asian

Lower Division Courses

18. Introduction to the Civilization of India. (4) Three hours of lecture and one hour of discussion per week. Readings, lectures, and discussions in the development of Indian culture from the advent of Islam to the present. Special emphasis on the use of the medieval religious movements of Bhakti and Indian Islam and the conflict of traditional and modern values in contemporary India. (SP) Staff

R5. Great Books of India. (4) Three hours of lecture and one hour of discussion per week. Formerly 5A. Reading and composition based on 10 classic works of Indian literature ranging from the ancient Sanskrit epics to modern novels by Indian and western authors. Weekly composition on literary topics and discussion 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 5B. Reading and composition in connection with eastern 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 selected 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 sub-
continent during the 19th and 20th centuries, through English translations and original works in English. Cross-references might be made to classic novels of related modern traditions on Indian themes. Critical discussion of how these modern genres adapts to local conditions and coexists 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. (F,SP)

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. Focuses on the society and culture through literature. Staff

C127. 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 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 by separate religious traditions facilitates comparisons and promotes an understanding not only of the differences among these religions but also of some of their commonalities in philosophy, theology, and practice. Also listed as Religious Studies C161. (F,SP) Staff

128. 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 in mid-century in influential modern novel. Examines religious conversions, transformations of women’s roles, and the concept of a secular state in post-independence India and 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 modern Indian society. 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 after taking Anthropology 184. Three hours of lecture per week. Organized around the principal cultures of the subcontinent, focusing on its modern and post-colonial evolution. Three hours of lecture and one hour of discussion per week. Prerequisites: 215A is prerequisite to 215B. One year of... Readings, lectures, and discussion of 19th and 20th century Indian literature. Also listed as Religious Studies C162. (F,SP) Goldman

143. Indian Romances. (3) Three hours of lecture per week. The literary tradition of the romance in South Asia, focusing on Indian narratives of love in different social contexts, and the fantasies surrounding romantic love. Readings include Kalidasa’s Sakuntala, love stories from India’s Islamic, 19th-century prose, romances, and several Hindi films. (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 dance-drama and dance-dramas of India and their impact on Indian culture. Lectures on the history and development of Indian dance and dance-drama, as well as modern Indian dance.Includes reading of Sanskrit texts on Indian dance and performance. (F,SP) Staff

C149. South Asia. (4) Students will receive no credit for C149 after taking Anthropology 184. Three hours of lecture per week. Cultural traditions, social organization, and change, with an emphasis on India and Pakistan. Also listed as Anthropology C184. (F,SP) Staff

155. Philosophies of India. (4) Three hours of lecture and one hour of discussion per week. The philosophies of India, Hindu and Buddhist, beginning with the Vedic period and concentrating on the classical systems. Staff

Graduate Courses

210. Panini and the Indian Linguistic Tradition. (4) Course may be repeated for credit. Three hours of lecture and one hour of discussion per week. Prerequisites: Some familiarity with linguistics and/or the elements of Sanskrit grammar. The linguistic description and analysis of Sanskrit as created and developed by the Sanskrit grammarians. (F,SP) Staff

211. Indian Philosophical Texts. (4) Course may be repeated for credit. Three hours of lecture and one hour of discussion per week. Prerequisites: Some knowledge of Sanskrit. Reading of Sanskrit texts on Indian philosophy (e.g. Vedanta, Mimamsa, Yoga, Nyaya). Staff

215A-215B. Readings in Indian Buddhist Texts. (4-4) Course may be repeated for credit. Three hours of lecture and one hour of discussion per week. Prerequisites: 215A is prerequisite to 215B. One year of Sanskrit and/or consent of instructor. A survey of the origins and development of the Abhidharma texts and common texts in Pali and Sanskrit. (F,SP) Staff

Southeast Asian

Lower Division Courses

10A-10B. Introduction to the Civilization of Southeast Asia. (4-4) Three hours of lecture and one hour of discussion per week. Lectures, readings, and discussion of the culture and civilization of Southeast Asia.

A. Mainland Southeast Asia: Covers the modern-day nations of Burma, Cambodia, Thailand, etc., with special emphasis on the impact of Hinduism and Buddhism. (F,SP) Staff

B. Insular Southeast Asia: Covers the modern-day nations of Indonesia, Malaysia, and the Philippines. Special emphasis on the arts and their social and political context, with discussions on the impact of the colonial experience and the question of modernization versus tradition. (F,SP) Twon

Upper Division Courses

122. Orality and Literacy in Insular Southeast Asia. (4) Three hours of lecture and one hour of discussion per week. This course examines the ways knowledge is organized in societies of insular Southeast Asia. It explores the shaping, communicating, storing, and retrieving of knowledge, beginning with oral tradition, progressing through manuscript and print culture into this electronic age. (F)

124. The Shadow-Play in Southeast Asia. (4) Three hours of lecture and one hour of discussion per week. Introduction to study of Southeast Asian shadow-plays (Indonesia, Malaysia, Thailand, Cambodia) with special reference to Malay genres. Course will deal with origins, history and development, cultural context, transmission, language and style of performance, repertoire, and ritual. Students will also learn rudiments of performing. (SP)

126. Introduction to Modern Indonesian and Malayan 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 Indonesian/Malaysian society. Emphasis on the socio-political aspects of this literature in the national 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 or consent of instructor. Readings and lectures on Thailand, Vietnam, Singapore, Cambodia, and Laotian materials as available. After brief attention to the influence of oral tradition, classical poetry, and dance drama, emphasis will be on modern novels, short stories, film, and television in their cultural/historical context. (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 ways in which perceptions and roles of women have been constructed and reinforced in a developing non-Western society. Course material includes literature, oral and manuscript narratives, ritual performance. (F) Twon

137. Islam and Society in Southeast Asia. (4) Three hours of lecture/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 re-situated itself. We will discuss the assimilation and resistance of Islam and of reformists and will also explore the struggles 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 focus on the latest examination of Islam and its societies in insular 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 literatures and will discuss different approaches to reading modern South and Southeast Asian texts. The course is open to advanced undergraduates and graduate students. (F,SP) Hadler

C141A. Southeast Asia to the 18th Century. (4) Three hours of lecture and one hour of discussion per week. Prerequisites: Successful completion of 1A-B. Readings in modern South and Southeast Asian literatures and cultures. Sufficient attention is paid to the spoken and written jargons that are associated with various recent regimes and ideological contexts. (F,SP) Staff

C141B. 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 History C111B. (F,SP) Staff

C141C. 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

Bengali

Lower Division Courses

1A-B. Introductory Bengali. (5,5) One and one-half hours of lecture and two and one-half hours of reading and writing per week. 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) Jain

2A-B. 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. (4,4) Three hours of lecture and laboratory work/visits per week. Prerequisites: 1A-B. This course acquaints students with 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

103A-103B. Intermediate Urdu. (4,4) Three hours of lecture/laboratory per week. Prerequisites: Successful completion of Urdu 2A-2B. The course introduces various types of written and spoken Urdu; vocabulary building, idioms, and problems of syntax; and conversation. Reading of selected fiction and nonfiction in modern Urdu, including fables, short stories, and poetry. Exercises in grammar, conversation, and composition. (F,SP) Staff

104A-104B. Advanced Urdu. (3,3) Three hours of lecture per week. Prerequisites: Two years of Urdu or consent of instructor. Reading of Urdu prose and poetry in a variety of literary and scholarly styles; composition. Topics in advanced grammar; designed to improve proficiency in speaking, listening, reading, and writing. Students will be expected to converse in a clearly participatory fashion, initiate, sustain, and bring to closure a wide variety of communicative tasks using diverse language strategies. (F,SP) Staff

Graduate Courses

221. 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. Dalmina

225. Urdu Literature. (4) Course may be repeated for credit with consent of instructor. Three hours of lecture and one hour of discussion per week. Prerequisites: At least two years of Hindi and/or Urdu and a knowledge of the Urdu script. Formerly 210 & 215. Reading will be from the 19th and 20th centuries and will include both poetry and prose. Post-partition literature of both India and Pakistan will be amply treated. Skill in reading and evaluating Urdu literary criticism is another goal. (F,SP) Staff

Khemr

Lower Division Courses

1A. Introductory Khmer. (5) Five hours of lecture and one hour of laboratory per week. Prerequisites: Two years of Khmer or consent of instructor. This course is designed to introduce students to the Khmer language, classical literature, drama, oral literature, and the Khmer writing system, and establishing communicative skills, and cultural competence. (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. This language was provided to 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 Khmer language laboratory tapes that are keyed to each lesson. 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

18. 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 Khmer, 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. Completion of the study of the texts used in Khmer 1A. (F,SP) Staff

Upper Division Courses

100A-100B. Intermediate Khmer. (5) Five hours of lecture per week. Prerequisites: 1A-B or equivalent. This course will consist of intermediate Khmer literature, history, literature, social, and political issues from a wide variety of sources, to enable students to acquire cultural competence in the language. (F,SP) Staff

222. Khmer History. (4) Course may be repeated for credit. 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 the Khmer language, classical literature, drama, oral literature, and the Khmer writing system, and establishing communicative skills, and cultural competence. (F,SP) Staff

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 the modern literature of Indonesia and Malaysia, and discuss social, political, and historical aspects of Malay language and literature, history and development of the language, classical literature, drama, oral literature, and modern literature of Indonesia and Malaysia, and dialect studies. (F,SP) Staff

100A-100B. Intermediate Indonesian. (5,5) Five hours of lecture and one hour of laboratory per week. Prerequisites: 1A-B. Readings in Indonesian texts, including newspapers, journals, and literature exploring a variety of styles. Systematic study of grammatical and lexical problems arising from these readings. Advanced exercises in composition, oral and written communicative skills, and cultural competence. (F,SP) Lunde

Graduate Courses

210A-210B. Reading in Modern Indonesian and Malaysian Literature. (4) Three hours of lecture and one hour of discussion per week. Prerequisites: Two years of Malay or Indonesian or consent of instructor. Formerly 212. This course will focus on literary literatures of Indonesia and Malaysia. Emphasis will be on the socio-cultural matrix of such modern genres as the novel, the short story, and poetry. Lectures and most course work in Indonesian. (SP) Staff
204. Readings in the Traditional Literature of the Malay World. (4) Course may be repeated for credit. Three hours of lecture and one hour of discussion per week. Prerequisites: Two years of Malay/Indonesian or consent of instructor. Formerly 194. This course explores two functions: it provides a survey of traditional Malay literature, involving study of texts from various periods and styles. It also offers advanced language instruction: Indonesian will be used in some lectures and in students' papers. (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. Gurmukhi script. Survey of grammar. 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 will cover 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 in Sanskrit epics and puranas; introduction to the Kavya style of classical Sanskrit poetry; readings in the sastras. (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. Advanced readings in Sanskrit literature, including Sanskrit ornate poetry with emphasis on the canons of poetic analysis of the Indian aesthetic tradition. (F,SP) R.P. Goldman

203. Vedic Sanskrit. (4) Course may be repeated for credit. Three hours of lecture and one hour of discussion per week. Prerequisites: 101B or equivalent. Readings from the Rig-veda and other Vedic texts, including Brahmanas and Upanishads. Knowledge of German and/or French is recommended. Staff

206. Middle Indic. (4) Course may be repeated for credit. Three hours of lecture and one hour of discussion per week. Prerequisites: Two years of Sanskrit or equivalent. Introduction to Middle Indic. An intensive study of texts in one or more of the Prakrit dialects, Pali, or Abhāpramāsa. Staff

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

208. Buddhist Sanskrit. (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. Readings in the literature of North Indian Buddhism with emphasis on the grammatical features that distinguish it from classical Sanskrit and Pali. 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 is a prerequisite for 1B. 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; 100A or consent of instructor is a prerequisite for 100B. 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

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

100A-100B. Intermediate Tamil. (3,5-3,5;5) Students who complete the laboratory 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

210-210B. 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: 101A or consent of instructor. Formerly Tamil 101A. This class is designed for students who have already achieved an intermediate degree of proficiency in speaking, reading and modern Vietnamese. Its objective is to move students towards a greater level of fluency in each of these key areas. The course also seeks to further an understanding of Vietnamese society, culture, and history as well as aspects of cross-cultural communication more generally. Students who successfully complete the course should be able to converse at a high level on a wide range of subjects; read newspapers, academic writing, and short fiction; write a business letter and conduct interviews for scholarly or journalistic research all in Vietnamese. In addition to weekly readings from Kenneth Quinn’s Advanced Vietnamese texts, the course will include works of fiction and non-fiction, newspaper and magazine articles, technical manuals and academic texts. Some attention will be given to poetry and verse and narrative in addition to primary emphasis on modern prose. Narrative and documentary films, television news and documentaries, and song lyrics will be used to enhance listening comprehension. To improve students’ grasp of grammar, syntax, and modern spoken and written Vietnamese. (F,SP) Staff

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 course 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. Textbooks, supplemental materials, short essays, and short fiction in Thai. (F,SP)

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 equivalent or consent of instructor is a prerequisite for 1B. Formerly Vietnamese 1A. An introduction to modern spoken and written Vietnamese using 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 phrasology, 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 as topic varies and with consent of instructor. Three hours of lecture per week. Prerequisites: 100A-B or equivalent. Formerly Vietnamese 101A. This course will teach students who already achieved an intermediate degree of proficiency in speaking, reading and modern Vietnamese. Its objective is to move students towards a greater level of fluency in each of the three key areas. The course also seeks to further an understanding of Vietnamese society, culture, and history as well as aspects of cross-cultural communication more generally. Students who successfully complete the course should be able to converse at a high level on a wide range of subjects; read newspapers, academic writing, and short fiction; write a business letter and conduct interviews for scholarly or journalistic research all in Vietnamese. In addition to weekly readings from Kenneth Quinn’s Advanced Vietnamese texts, the course will include works of fiction and non-fiction, newspaper and magazine articles, technical manuals and academic texts. Some attention will be given to poetry and verse in addition to primary emphasis on modern prose. Narrative and documentary films, television news and documentaries, and song lyrics will be used to enhance listening comprehension. To improve students’ grasp of grammar, syntax, and modern spoken and written Vietnamese. (F,SP) Staff

101B. Advanced Vietnamese. (3) Three hours of lecture per week. Prerequisites: 100A-100B or equivalent. Formerly Vietnamese 101B. For students who have completed Vietnamese 101A or the equivalent. A continuation of 101A, with the goal of conversational fluency, advanced reading competence, and facility in
writing. In addition to weekly readings from Kenneth Quinn’s Advanced Vietnamese (Itaca: Cornell University SEAP, 1991) assignments will be drawn from contemporary literature, newspaper and magazine articles, legal manuals and academic texts. Some attention will be given to poetry and verse narrative in addition to a primary emphasis on modern prose. Narrative and documentary films, television news broadcasts, and song lyrics will be used to enhance listening comprehension. To improve students’ grasp of grammar, syntax and modern usage, written tasks will include weekly take-home assignments, short in-class drills and one book report, film review or research project to be selected in consultation with the instructor. Regular attendance and participation in classroom activities is mandatory and no English will be spoken in class. (F, SP) Staff

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 102B or 102C; 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 Catholic, 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 equivalent 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 102B or 102C; Catalan 101 or 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, Catalan, or 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 102B or 102C; Portuguese 101; one course from the literature of Spanish America; one course from the literature of Brazil; five other courses in Spanish/Portuguese language or linguistics, or in Brazilian or Spanish-American literature 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 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: Two courses from the 102 series (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 equivalences 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 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 major advisor before 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 bilingualism issues, such as Psychology 125 or Education 141 (3 units); 2) One upper division course in U.S. Hispanic literature/culture, such as Chicano Studies 150 or 170 (3 units); 3) One upper division course, 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 second semester of the senior year, seven core 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 any 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 honors core courses: H195A-H195B, which are offered each semester. These courses consist of independent study and the writing of a thesis over the course of two semesters under the direction of an appropriate member of the department.

Section 467: Spanish and Portuguese (College of Letters and Science)

Department Office: 5319 Dwinnell Hall, (510) 642-0471 http://spanish-portuguese.berkeley.edu/
Chair: Dr. Drou Dougherty, Ph.D.

Professors
Norma Alarcón, Ph.D. Indiana University, Comparative ethnic studies, Chicano studies, feminist theory
Mónica A. Azocar, Ph.D. Cornell University, Hispanic linguistics, applied linguistics
Emilio L. Bergmann, Ph.D. Johns Hopkins University, Spanish Golden Age literature
Anthony J. Cascard, Ph.D. Harvard University. Spanish scientific and technological literature
Dr. Drou Dougherty (Chair), 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
Jose Rabasa, Ph.D. University of California, Santa Cruz. Latin American studies, colonial and postcolonial studies
Julio Rivas, Ph.D. Princeton University. 19th and 20th century Spanish American literature
Candace Gainer, Ph.D. Stanford University. Brazilian literature, Hispanic folk traditions
Arthur L. Akins, Ph.D. (Emeritus)
Jerry R. Craddock, Ph.D. (Emeritus)
Luis Monzó, Licenciado en Derecho, LL.D. (Emeritus)
Louis A. Muñoz, Ph.D. (Emeritus)
John H. R. Pott, Ph.D. (Emeritus)
Benjamin M. Woodbridge, Jr., Ph.D. (Emeritus)

Associate Professors
Ignacio E. Navarrete, Ph.D. Indiana University. 16th-century poetry and literary theory
Jose Luis Peralta, Ph.D. University of California, Los Angeles. Brazilian literature, cinema, social thought
Jesús Rodríguez Velasco, Ph.D. University of Salamanca. Spanish medieval literature, literary theory

Assistant Professors
Natalia Brizuela, Ph.D. New York University. 19th and 20th century Latin American literature
Michael Iarocci, Ph.D. University of Pennsylvania. 18th and 19th-century Spanish literature and culture
Estelle C. Tarica, Ph.D., M.A. Cornell University. 20th-century Latin American literature and culture

Lecturers
Amelia Barili, Ph.D. University of California, Berkeley
Cléia Donovan, M.A. San Francisco State University

Lecturer
Herminia Jiménez Kerr, M.A. University of California, Berkeley

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 literature 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 the New, to training in advanced study and independent research. The department’s policy is to maintain a balanced strength between literature and language and between Iberian and Latin American facets of a unified field.
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 used for a major program of another department or group; (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: Five upper division courses in Spanish/Spanish American literature, 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. Completion, as certified by the departmental adviser for the minor program. Students interested in either program should therefore, work closely with the departmental adviser 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 Hispanic 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 Spanish and Spanish-American Literature, and 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 (course work and thesis) is contingent upon approval of the student’s thesis proposal by their assigned advisory committee. A minimum of 21 units in course work is required, including 12 units (four courses) in graduate level (200 series) courses in the Department of Spanish and Portuguese, one of which must be in linguistics/theory, and a minimum of three courses in Portuguese. For Plan II (course work and comprehensive examination), a minimum of 24 units in course work is required, with 12 units (four courses) in graduate (200 series) courses in the Department of Spanish, 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. For Plan II, a comprehensive 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 a reading knowledge of a major in Spanish approximately equivalent to the undergraduate major at Berkeley (Option A). The student must also give evidence of a comprehensive knowledge of Spanish and Spanish-American literature as a collateral, and of prescribed masterpieces in the third language.

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 language.

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 at least one broad, integrated field (period, movement, or genre) in both Italian and French literature.

3. Plan III requires an in-depth knowledge of the structure and history (internal and external) of Spanish, and either the history or 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 Option B), or with a corresponding major in Portuguese, or (b) the successful completion of eight courses of postbaccalaureate work in Hispanic literatures, linguistics, and/or philology, of which at least six must be in strictly graduate courses; (c) work at an advanced level in an appropriate collateral subject (literature or linguistics). For admission to the qualifying examination, the student’s record must show one graduate course in historical or descriptive Hispanic linguistics, one in literary or linguistic theory, and a reading knowledge of two foreign languages pertinent to the specialization. The student must also give evidence of a comprehensive knowledge of Spanish and Spanish-American literature or Luso-Brazilian literature and a basic knowledge of Hispanic and general linguistics. (The chair, in consultation with the student’s graduate advisers, will appoint a committee which, during the student’s first term, will evaluate previous preparation and determine what additional courses and/or examinations, if any, will be required.)

The qualifying examination will test the student’s knowledge of a specific, emphasized field to be selected in consultation with the graduate adviser from among the following: medieval Hispanic literature, Spanish and Spanish-American literature (16th-18th century), modern Spanish and Spanish-American literature, Latin American literature, Latin American Studies, Portuguese, and Luso-Brazilian literature.

Preparation for Graduate Study

1. Elementary Spanish. (5) Five hours of recitation and one and one-half hours of laboratory per week. Preparatory course. Not open to students who have completed two years or more of high school Spanish, or to native speakers. (F,SP) Staff

2. Elementary Spanish. (5) Five hours of recitation and one and one-half hours of laboratory per week. Prerequisites: 1 or equivalent. Continuation of 1. Not open to students who have completed three years or more of high school Spanish, or native speakers. (F,SP) Staff

3. Intermediate Spanish. (5) Five hours of recitation and one and one-half hours of laboratory per week. Prerequisites: 2 or equivalent. Continuation of 2. Course includes review and development of grammatical concepts taught in Spanish 1-2, as well as further practice in composition. (F,SP) Staff

4. Intermediate Spanish. (5) Five hours of recitation and one and one-half hours of laboratory per week. Prerequisites: 3 or equivalent. Continuation of 3. Development of grammatical concepts taught in Spanish 3-4, and further practice in composition. (F,SP) Staff

5. Elementary Spanish for Hispanics. (5) Five hours of recitation and one and one-half hours of laboratory per week. Prerequisites: Consent of instructor. An elementary course designed for the Hispanic student with limited oral fluency and no formal training in the language. Structured to use the students’ familiarity with the pronunciation of Spanish to develop a communicative ability and to impart a knowledge of the structure of the language equivalent to Spanish 1 and 2. (F,SP) Staff

6. Spanish

Lower Division Courses

1. Elementary Spanish. (5) Five hours of recitation and one and one-half hours of laboratory per week. Preparatory course. Not open to students who have completed two years or more of high school Spanish, or to native speakers. (F,SP) Staff

2. Elementary Spanish. (5) Five hours of recitation and one and one-half hours of laboratory per week. Prerequisites: 1 or equivalent. Continuation of 1. Not open to students who have completed three years or more of high school Spanish, or native speakers. (F,SP) Staff

3. Intermediate Spanish. (5) Five hours of recitation and one and one-half hours of laboratory per week. Prerequisites: 2 or equivalent. Continuation of 2. Course includes review and development of grammatical concepts taught in Spanish 1-2, as well as further practice in composition. (F,SP) Staff

4. Intermediate Spanish. (5) Five hours of recitation and one and one-half hours of laboratory per week. Prerequisites: 3 or equivalent. Continuation of 3. Development of grammatical concepts taught in Spanish 3-4, and further practice in composition. (F,SP) Staff

5. Elementary Spanish for Hispanics. (5) Five hours of recitation and one and one-half hours of laboratory per week. Prerequisites: Consent of instructor. An elementary course designed for the Hispanic student with limited oral fluency and no formal training in the language. Structured to use the students’ familiarity with the pronunciation of Spanish to develop a communicative ability and to impart a knowledge of the structure of the language equivalent to Spanish 1 and 2. (F,SP) Staff

6. Spoken Spanish. (3) Three hours of lecture per week. Prerequisites: 3 or equivalent. Course designed to increase communication skills (speaking ability and listening comprehension) as well as to improve vocabulary control and awareness of grammatical struc-
tured. Some reading/laboratory work required. Not for native or near-native speakers. Enrollment limit: 16 students per section. (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 102A and 102B. (F,SP)

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

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.

25. Reading and Analysis of Literary Texts. (3) Three hours of lecture per week. Prerequisites: 4, 8, or equivalent. Introduction to literary concepts, terminology, and theory with application to poetic, dramatic, and prose texts. Required of majors and minors. (F,SP) Staff

26. Advanced Spoken Spanish. (3) Three hours of lecture/discussion per week. Prerequisites: 4, 8, or equivalent. Course designed to increase communicative skills (speaking ability and listening comprehension) as well as to improve vocabulary control and ability to grammatically structure a text at a level beyond that of Spanish 8. Some reading/laboratory work required. Not for native or near-native speakers. Enrollment limit: 16 students per section. (F,SP) Staff

39. Freshman/Sophomore Seminar. (3) Course may be repeated for credit as topic varies. Three hours of seminar per week. Seminars designed to introduce under graduates to areas of Spanish and Latin American literature and culture.

84. Sophomore Seminar. (1,2) Course may be repeated for credit as topic varies. One hour of seminar per week. Two hours of seminar per week for eight weeks. One and one half hours of seminar per week for ten weeks. Two hours of seminar per week for six weeks. Three hours of seminar per week for five weeks. Three hours of seminar per week for four weeks. Three hours of seminar per week for three weeks. Course may be repeated for credit as topic varies. Three hours of seminar per week. Prerequisites: 102A or equivalent. Three hours of lecture per week. Prerequisites: 25 or equivalent. Beginnings to 1880. (F)

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. Deficiency in 102C cannot be removed by completing 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, with emphasis on short stories. It will have three main components: a) the reading and discussion of short stories outside of class; b) short and varied creative writing exercises, done both in and out of class; 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. 1880 to the present. (SP)

107A. Survey of Spanish Literature. (3) Three hours of lecture per week. Prerequisites: 25 or equivalent. Beginnings to 1700. (F)

107B. Survey of Spanish Literature. (3) Three hours of lecture per week. Prerequisites: 25 or equivalent. 1700 to the present. (SP)

108. Spanish Ballads. (3) Three hours of lecture per week. Prerequisites: 25 or equivalent. Introduction to Spanish Balladry, with emphasis on origins and development through the sixteenth century.

109. Spanish Drama of the 16th and 17th Centuries. (3) Three hours of lecture per week. Prerequisites: 25 or equivalent.

111A-111B. Cervantes. (3,3) Three hours of lecture/ seminar per week. Prerequisites: 25 or equivalent. 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 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.

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 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, Hutle, Guha, etc. Readings include representative texts from different genres: relation, chronicles, letters, epic 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. Rabassa

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 medieval Arabic and Italian stories, the “core” readings of Renaissance Spanish texts, and modern expressions of the picaresque sensibility. (F,SP) Naverrete

123A-123B. Modern Spanish Prose Fiction. (3,3) Three hours of lecture per week. Prerequisites: 25 or equivalent.

126. Medieval Spanish Literature. (3) Three hours of lecture per week. Prerequisites: 25 or equivalent.

130. Twentieth-Century Spanish American Poetry. (3) Three hours of lecture per week. Prerequisites: 25 or equivalent.

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 and including the United States. Particularly recommended for students majoring in English and for students who have expertise in the area of Latin American literature. Professor Gwen Kirkpatrick will teach the first introductory class and lead the first discussion section. The remaining four seminars and three hours of discussion will be taught by the distinguished Chilean novelist Diamela Eltit. She has been invited to the Berkeley campus by the Chancellor as Regents’ Lecturer.

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. Special topics in American cultures. This 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 passed/not passed 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 section. The remaining four seminars and four hours of discussion will be taught by the distinguished Chilean novelist Diamela Eltit. She has been invited to the Berkeley campus by the Chancellor as Regents’ Lecturer.

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 training in phonetic transcription and laboratory exercises. Introduction to structural and generative phonological analysis.

162. The Structure of Spanish. (3) Three hours of lecture per week. Prerequisites: 25 or its equivalent. Spanish 100 is recommended. An overview of Spanish morphology and syntax. Word formation (inflection, derivations, compounding); morphology of structure (coordination, subordination, paragraph structure, etc.).

163. Issues of Multilingualism. (3) Three hours of lecture per week. Prerequisites: 25 or its equivalent. Spanish 100 is recommended. An overview of issues involved in the presence of different languages in the same community, such as bilingualism, multilingualism, language conflict, language and identity, language choice, language and gender, and multiculturalism, illustrated by case studies from relevant regions, including the United States. Recommended for Option D majors (Hispanic Languages and Bilingual Issues).

164. Spanish Dialectology. (3) Three hours of lecture/discussion per week. Prerequisites: 25 or equivalent. Introduction to geographical and social variation in the Spanish-speaking world.
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 various languages, 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 published folklore as well as field-work data. 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 compares linguistic structures and highlights structural similarities and differences between the two languages. Course applies to the comparative linguistics requirement of Option D.

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.

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 conferences. Prerequisites: Spanish and Portuguese major, 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. (3) Individual conferences. 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 each 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 three hours of field work per week, per unit. Must be taken on a passed/not passed 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.

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 honors status plus preapproval of instructor. Prerequisites: Senior honors status plus preapproval of instructor.

Graduate Courses

200. Proseminar. (1) One and one-half hours of seminar per week. Must be taken on a satisfactory/unsatisfactory basis. This course is designed to give to all new graduate students a broad view of the department’s faculty, the courses they teach, and their fields of research. In addition, it will familiarize the students with some practical aspects of the graduate career, issues that pertain to specific fields of research, and questions currently being debated across the profession. The readings for the course will consist of photocopied articles or chapters of books provided by the department’s faculty. (F)

201. Literary Linguistics. (4) Course may be repeated for credit as topic varies. Two or three hours of lecture per week. Applications of linguistic theory to literary texts and the analysis of fiction prose, discourse analysis, and the literary representation of speech. (F,SP) Azeevedo

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 it 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. (F)

C200. 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). Formerly Romance Philology 200. 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 C201 and French C202. Staff.

203. Introduction to the Historical Grammar of Spanish. (4) Two or three hours of lecture per week. Formerly 202B. This course is intended as a preface to the study of Romance languages. Prerequisites: Knowledge of Romance will be assumed. Intermediate, some consideration will be given to the systematic and descriptive study of Spanish. This course is intended as a preface to the study of Romance languages.

209. Seminar in Hispanic Linguistics. (4) Course may be repeated for credit. Three hours of seminar per week. (F,SP)

210. Introduction to Medieval Hispanic Literature. (4) Two or three hours of lecture per week.

211. Major Prose Authors of the Golden Age. (4) Two or three hours of lecture per week.

212. Major Poets of the Golden Age. (4) Two or three hours of lecture per week.

213. Major Dramatists of the Golden Age. (4) Two or three hours of lecture per week.

215. The Spanish Enlightenment. (4) Two or three hours of lecture per week.

216. Spanish Romanticism. (4) Two or three hours of lecture per week.

217A. The Spanish Novel to 1850. (4) Two or three hours of lecture per week.

217B. The Spanish Novel Since 1850. (4) Two or three hours of lecture per week.

218. Modern Spanish Drama. (4) Two or three hours of lecture per week.

219. Modern Spanish Poetry (After Romanticism). (4) Two or three hours of lecture per week.

220. Colonial Spanish American Literature. (4) Two or three hours of lecture per week.

234A. Modern Spanish American Poetry. (4) Two or three hours of lecture per week. A comprehensive survey of poetry in Latin America through modernism, with special emphasis given to the poetry of Ruben Dario and the legacy of Symbolism in Latin America.

234B. Modern Spanish American Poetry. (4) Two or three hours of lecture per week.

236A. Modern Spanish American Prose. (4) Two or three hours of lecture per week.

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. Training in the analysis of Spanish verse, including sonnets, ballads, coplas, and soneto. Also includes the study of the computer program present in the course.

246. Hispanic Paleography. (4) Two or three hours of lecture/seminar per week.

247. Computational Studies 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 databases.

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 topic.

250. 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, the Novelas ejemplares, and the Galatea. The dramatic works. Focus will change according to the needs and interests of members of the course, but will address such issues as the place of Cervantes’ works in literary history, the background contexts of Cervantes’ works, and contemporary approaches and movements in Cervantes criticism.

270. The Colonial Period in Spanish America. (4) Course may be repeated for credit as topic varies. Two or three hours of lecture/seminar per week.

276A. The Spanish American Novel. (4) Two or three hours of lecture/seminar per week.

276B. The Spanish American Novel. (4) Two or three hours of lecture/seminar per week.

278. The Literature of a Single Spanish American Country. (4) Course may be repeated for credit as topic varies. Two or three hours of lecture/seminar per week.

280. Seminar in Spanish American Literature. (4) Course may be repeated for credit as topic varies. Two or three hours of lecture per week.

285. Seminar in Spanish Literature. (4) Course may be repeated for credit as topic varies. Two or three hours of lecture per week.

288. Special Seminars in Hispanic Literature. (4) Course may be repeated for credit as topic varies. Two 1 1/2 hour lectures per week for four weeks. Must be taken on a satisfactory/unsatisfactory basis. Special Seminars in Hispanic Literature.

289. Special Study for Graduate Students. (2-4) Course may be repeated for credit. Individual conferences. Prerequisites: Graduate standing. Individual conferences on special programs of study or research in a restricted field not covered by available courses or seminars. (F,SP)

299. Special Advanced Study. (3-6) 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: 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 comprehensive examination for the M.A. degree. May be
taken only in the semester in which the examination is attempted. (F,SP)

602. Individual Study for Doctoral Students. (3) 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: Approval of graduate adviser. In 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 semesters 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; evaluation conferences. Must be taken on a satisfactory/unsatisfactory basis. (F,SP)

Portuguese

Lower Division Courses

11. Elementary Portuguese. (5) Five hours of lecture and two hours of laboratory per week. Beginner’s course. Not open to students who have taken Portuguese or equivalent, nor native speakers. Completion of this course qualifies students for Portuguese 8, 25, or 102. (F,SP)

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 to native speakers. Completion of this course qualifies students for Portuguese 8, 25, or 102. (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. (F)

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 vocabulary control and awareness of grammatical structure at a level beyond that of Portuguese 8. Some reading/laboratory work required. Not for native or near-native speakers. Enrollment limit: 16 students per section. (F,SP)

39. Freshman/Sophomore Seminar. Course may be repeated for credit as topic varies. Prerequisites: Prior knowledge of Portuguese helpful. Freshman and sophomore semesters 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)

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 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

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. An intensive course for students with no previous study of the language. This offering may be taken independently for reading knowledge. In conjunction with Portuguese 101B, it constitutes an intensive introduction to Portuguese, and prepares the student for further upper division course work. (F,SP)

101B. Portuguese for Advanced Students: Workshop. (2) Two hours of workshop per week. Prerequisites: Credit of 16-20 units or equivalent of another Romance language, or consent of instructor. Emphasis on understanding, speaking and writing Portuguese. Taken in conjunction with Portuguese 101A, the course provides an intensive introduction to the language. (F,SP)

102. Readings in Portuguese. (3) Three hours of lecture/discussion per week. Prerequisites: 101A-101B, or equivalent. The continuation of Portuguese 101A-101B, this course focuses on a variety of texts with special emphasis on 20th-century Brazilian literature and Portuguese in the structure of a play. We will study poetry as diverse as the work of the Nobel Prize-winning Jose Saramago and such narrative prose as that of the important Spanish American authors. The course provides a useful introduction to twentieth-century Latin American writing as a whole. Works in Spanish and in Portuguese are available as well as English, and lectures and readings are in English. Also listed as Spanish C134. (F,SP)

135. Studies in Luso-Brazilian Literature. (2-3) Course may be repeated for credit as topic varies. Two or three hours of lecture per week. Prerequisites: Twenty units or equivalent of Portuguese or another Romance language. Special tutorial or seminar on selected topics. (F,SP)

147. Portuguese Honors Course. (3) Individual conferences. Prerequisites: Twenty units or equivalent of Portuguese or another Romance language. Directed study centering on the preparation/completion of an honors thesis (see Honors Program, Option B, above). (F,SP)

180. Special Study for Undergraduates. (1-3) Course may be repeated for credit. Individual conferences. Prerequisites: Senior honor status and 20 units or equivalent of Portuguese or another Romance language. Special tutorial or seminar on selected topics. (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 Curricula section of this catalog. One to three hours of independent study per week. Must be taken on a pass/fail basis. Prerequisites: Senior honor status and 20 units or equivalent of Portuguese or another Romance language. (F,SP)

Graduate Courses

244. Literature and Oral Tradition. (4) Two hours of seminar per week. Prerequisites: Graduate standing or consent of instructor. This course looks at various theories of literacy and orality proposed by literary scholars, folklorists, and anthropologists. It applies a number of these to selected Brazilian examples, including contemporary oral and semi-oral material in quite different ways. Reading knowledge of Spanish or Portuguese is normally required. (F,SP)

250. Critical and Stylistic Studies of a Single Author or Period. (4) 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 independent study per week. Must be taken on a pass/fail basis. Prerequisites: Senior honor status and 20 units or equivalent of Portuguese or another Romance language. (F,SP)

268. Special Study for Graduate Students. (3-6) Course may be repeated for credit. Prerequisites: Graduate standing. Individual conferences on special programs of study or research in a restricted field not covered by available courses or seminars. (F,SP)

279. Special Advanced Study. (3-6) Course may be repeated for credit. Prerequisites: Graduate standing. Individual conferences, Sections 1-20 to be graded on a letter-graded basis. Sections 21-40 to be graded on a satisfactory/unsatisfactory basis. Prerequisites: Restricted to students writing doctoral dissertations. (F,SP)

Spanish and Portuguese / 471

B prefix=language course for business majors
C prefix=cross-listed course
AC suffix/course satisfies American cultures requirement
H prefix=honors course

*Professor of the Graduate School
†Recipient of Distinguished Teaching Award
Catalan

Upper Division Courses

101. Catalá Advanced Students. (3) Three hours of lecture per week. Prerequisites: Credit for 16-20 units of another Romance language, or consent of instructor. An intensive course for students with no previous study of Catalan.

102. Readings in Catalan. (3) Course may be repeated for credit. 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.

180. Special Study for Undergraduates. (2-3) Course may be repeated for credit. Individual conferences. Prerequisites: Twenty units or equivalent of Catalan or consent of instructor. Special tutorial or seminar on selected topics. (F,SP)

Graduate Courses

285. 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 13th century as well as an introduction to Old Catalan. (Fall,Summer)

C285. 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 13th century as well as an introduction to Old Catalan. Also listed as Romance Languages and Literatures C213.

298. Special Study for Graduate Students. (3-8) Course may be repeated for credit as topic varies. Prerequisites: Graduate standing. Individual conferences on special programs of study or research in a restricted field not covered by available courses or seminars.

Statistics

(College of Letters and Science)

Department Office: 367 Evans Hall, (510) 642-2781 http://www.stat.berkeley.edu

Chair: Deborah Nolan, Ph.D.

Professors

David J. Aldous, Ph.D. Cambridge University. Theoretical and applied probability

David A. Freedman, Ph.D. Stanford University. Statistical inference, probability

Peter Bickel, Ph.D. University of California, Berkeley. Nonparametric statistics, teaching of statistics

Peter J. Bickel, Ph.D. University of California, Berkeley. Nonparametric estimation, asymptotic methods

Ph.D. Probability and Applied Probability (Chair)

Leo Breiman, Ph.D.

Michael L. Friedman, Ph.D., D.Sc. (hon.) Princeton University. Statistical methods and computational science

Charles J. Stone, Ph.D. Stanford University. Statistical inference, machine learning, artificial intelligence

Deborah Nolan, Ph.D. Yale University. Asymptotic theory, teaching of statistics, technology in education

Martin Wainwright, Ph.D. Massachusetts Institute of Technology. Machine learning, statistical signal/image processing, and coding theory, graphical models and Markov random fields

Senior Lecturer

Roger Purves, Ph.D. University of California, Berkeley. Foundations of probability, measurability

Juliet P. Shaffer, Ph.D. (Emeritus)

Statistical Computing Facility

Deborah Nolan (Director), Ph.D. Yale University. Asymptotic theory, teaching of statistics, technology in education

Department Overview

Service Courses. The department offers a variety of introductory service courses differing both in mathematical level and in topics emphasized. Statistics 2 requires only high school mathematics; 20, 21, and 25 require some calculus; 20 is for students generally; 21 is intended for business students and 25 for engineers. Statistics 131A is an upper division course, emphasizing inference methods used in social and biological sciences. Statistics 131A is the rough beginning probability course. Statistics 135 treats inference concepts used in engineering and science. Statistics 200A and 200B are graduate-level versions of 134 and 135, respectively.

The Minor

Lower Division Courses. Required: Mathematics 1A-1B and 53-54. Mathematics 53-54 must be completed with grades of C in each.

Upper Division Courses: Statistics 101 or 134; Statistics 102 or 135; and three courses from Statistics 150, 151A, 151B, 152, 153, 155, and including at least one course with a laboratory. The courses for the minor must have the approval of the minor adviser.

The Major

Lower Division Courses. Required: Mathematics 1A-1B and 53-54. Mathematics 53-54 must be completed with grades of C in each.

Upper Division Courses: Statistics 101 or 134; Statistics 102 or 135; and three courses from Statistics 150, 151A, 151B, 152, 153, 155, and 157, including at least one course with a laboratory. The courses for the major must have the approval of the major adviser.

must have the approval of the major adviser, who may authorize reasonable exceptions and substitutions.

Double Major. Students are encouraged to combine the statistics major with a major in mathematics, applied mathematics, computer science, or another statistical application such as economics.

Honors Program. Students with an overall 3.3 grade-point average or higher and a 3.3 grade-point average or higher in courses in the major may apply for admission to the honors program with the approval of the major adviser. The program consists of course H195, which includes reading in a special topic and writing a thesis.

Preparation for Graduate Study. Those interested in the graduate statistics major should include 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.

The Graduate Program

The department offers the M.A., Cand. Phil., and Ph.D. degrees. Information concerning the requirements for these degrees is available in the brochure Requirements for Higher Degrees in Statistics, available upon request from the department graduate secretary. For specific details the appropriate department graduate adviser should be consulted.

In addition, the department, in conjunction with the School of Public Health, offers degrees in biostatistics. The department offers a Ph.D. degree in biostatistics through the Interdepartmental Group in Biostatistics. There are two biostatistics graduate programs: M.A. and Ph.D. These programs are offered to students who have taken undergraduate courses in mathematics and statistical background with an interest in biomedical sciences, or degrees in the biological sciences with a major interest in mathematics and statistics. For further information see Biostatistics, see Public Health.

The Statistical Laboratory

The Statistical Laboratory offers a consulting service in statistics for graduate students and faculty in other disciplines. The consultants are graduate students in statistics or biostatistics working under the supervision of a faculty member. The laboratory is currently developing a variety of interdisciplinary research projects involving collaborative work between faculty and students in statistics and other departments.

The Statistical Computing Facility

The Statistical Computing Facility provides computing support for the department. It currently supports over 40 networked SUN workstations, a multiprocessor SUN 2000 server, a SUN 3000 multiprocessor computer server, and many x-window terminals, printers, and other peripherals. These are all heavily used in both the graduate and undergraduate instructional programs. In addition, the facility offers high-level consulting assistance in statistical computing and is active in developing advanced statistical software.

Lower Division Courses

ONLY ONE LOWER DIVISION STATISTICS COURSE MAY BE TAKEN FOR CREDIT.

2. Introduction to Statistics. (4) Students who have taken 2X, 5, 20, 21, 21X, or 25 will receive no credit for 2. Three hours of lecture and two hours of laboratory per week. Population and variables. Standard measures of location, spread and association. Normal approximations in hypothesis testing and confidence intervals. Elementary probability concepts and applications.
proximation, Regression, Probability and sampling, Bi- 
nominal distribution. Interval estimation. Some standard 
significance tests. (F,SP)

20. Introduction to Probability and Statistics. (4) 
Students who have taken 2, 2X, 5, 21, 21X, or 25 will 
receive no credit for 20. Three hours of lecture and two 
hours of laboratory per week. Prerequisites: One 
semester of calculus. For students with mathematical 
background who wish to acquire basic concepts. Rel- 
ative frequencies, discrete probability, random vari- 
ables, expectation. Testing hypotheses. Estimation. Il- 
ustrations from various fields. (F,SP)

21. Introductory Probability and Statistics for Busi- 
ness. (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. Prerequi- 
sities: Business Calculus. Descriptive statistics, prob- 
ability models and related concepts, sample sur- 
veys, estimates, confidence intervals, tests of signif- 
ance, controlled experiments vs. observational studies, 
and regression. (F,SP)

24. Freshman Seminars (1) Course may be repeated 
credit as topic varies. One hour of seminar per week. 
The Berkeley Seminar Program has been de- 
developed to provide new students with the opportunity 
to explore an intellectual topic with a faculty member in 
a small-group setting. Berkeley seminars are offered in 
all campus departments, and topics vary from depart- 
ment to department and semester to semester. En- 
rollment limited to 15 freshmen. (F,SP)

25. Introduction to Probability and Statistics for En- 
teering Freshmen. Students who have taken 2, 2X, 5, 
or 21 will receive no credit for 25. Three hours of 
lecture and one hour of laboratory per week. Prerequi- 
sities: A year of calculus. Emphasis on concepts and 
aplications. Conditional probability, Independence. 
Expectation. Standard discrete and continuous distri- 
butions. Regression and correlation. Point and interval 
estimation. Illustrations from engineering.

39. Freshman/Sophomore Seminar. Course may be 
repeated for credit as topic varies. Sections 1-2 to be 
graded on a passed/not passed basis. Sections 3-5 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-semi- 
inar setting. These seminars are offered in all campus 
departments; topics vary from department to depart- 
ment and semester to semester. Enroll- 
ment limited to 15 sophomores. (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 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 

205A-205B. Probability Theory. (4;4) 
Prerequisites: Knowledge of Lebesgue integral and/or 
elementary probability. Expectation, distributions. Laws 
of large numbers, central limit theorems for independent 
random variables. Characteristic function methods. Conditional 
expectations; martingales and theory convergence. 
Markov chains. Stationary processes.

C205A. Probability Theory. (4) Three hours of 
lecture per week. Some knowledge of real analysis and 
met- ric 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 con- cepts 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 pro- 
ces. Also listed as Mathematics C218A. 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 con- cepts 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 pro- 
ces. Also listed as Mathematics C218A. Staff

213A. Statistical Inferences for Social and Life Sci- 
entists. (4) Three hours of lecture and two hours of 
labouratory per week. Prerequisites: One semester 
of calculus or consent of instructor. Ideas for estimation 
and hypothesis testing basic to applications. Linear es- 
timation, tests, and confidence intervals. (F,SP)

133. Concepts in Computing with Data. (3) Two 
hours of lecture and two hours of computer laboratory 
per week. An introduction to computationally intensive 
applications. Topics will include organization and 
use of databases, visualization and graphics, statisti- 
cal learning and data mining, model validation proce- 
dures, and the presentation of results. (F,SP) Stark

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, indepen- 
dence, laws of large numbers. Discrete and continuous 

205A. Probability Theory. (4) Three hours of 
lecture per week. Prerequisites: Some knowledge of 
real analysis and metric spaces, including compact- 
ness, Riemann integral. Knowledge of Lebesgue in- 
tegral and/or elementary probability is helpful, but not 
essential, given otherwise strong mathematical back- 
ground. Measure theory concepts needed for proba- 
bility. 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.

C205A. Probability Theory. (4) Three hours of 
lecture per week. Some knowledge of real analysis and 
met- ric 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 con- cepts 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 pro-
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. Course topics will include general theory of stochastic 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. A year long introduction to classical statistics, an introduction to decision theory, and Bayesian methods. A year of linear algebra; a year of 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: 210 or 205 and 215. This course introduces the student to topics of current research interest in theoretical statistics. Typical topics, which change from year to year, include the following: semiparametric, semiparametric, nonparametric modeling; time series and survival analysis; model selection; empirical and point processes; asymptotics in higher dimensions; stochastic and Monte Carlo integration; convergence of experiments; minimum distance methods.

215A-215B. 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 design. 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/period per week. Prerequisites: Linear algebra, a year of calculus, two semesters of upper division or graduate probability and statistics. Theory of least squares estimation, interval estimation, and tests under the general linear fixed effects model with normally distributed errors. Large sample theory for non-normal linear models. Two and higher way layout, residual analysis. Effects of departures from the underlying assumptions. Robust alternatives to least squares.

232. Experimental Design. (4) Three hours of lecture and two hours of laboratory per week. Prerequisites: 200B or equivalent. Randomization, blocking, factorial design, confounding, fractional replication, response surface analysis and design. Applied linear models. Course may be repeated for credit.

240. Nonparametric and Robust Methods. (4) Three hours of lecture and two hours of laboratory per week. Prerequisites: A year of upper division probability and statistics. Standard nonparametric tests and confidence intervals; order for continuous and categorical data; nonparametric estimation of quantiles; robust estimation of location and scale parameters. Efficiency comparison with the classical procedures. (F)

241A. Statistical Learning Theory. (3) Three hours of lecture per week. Prerequisites: Linear algebra, calculus, basic probability and statistics, algorithms. Classification, regression, clustering, dimensionality reduction, and density estimation. Model mixture, hierarchical models, factorial models, hidden Markov and state space models. General theory and algorithms for general probabilistic inference nonparametric methods including decision trees, kernal methods, neural networks, and ensembles. Methodology. Also listed as Computer Science C281A. (F)

241B. Advanced Topics in Learning and Decision-Making. (3) Three hours of lecture per week. Recent topics include: Graphical models and approximate inference algorithms. Markov chain Monte Carlo, mean field, and probabilistic programming methods. Model selection and stochastic realization. Bayesian, information-theoretic and structural risk minimization approaches. Markov decision processes and partially observable Markov decision processes. Reinforcement learning. (SP)

242A. 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 theoretic and structural risk minimization approaches. Markov decision processes and partially observable Markov decision processes. Reinforcement learning. Also listed as Computer Science C281B. (SP)


243. Introduction to Statistical Computing. (4) Course may be repeated for credit. Three hours of lecture and two hours of laboratory per week. Prerequisites: Graduate standing; knowledge 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, generating other distributions, random sampling and permutations. Matrix computations in linear models. Nonlinear computations and applications to statistical procedures. Other topics of current interest, such as issues of efficiency, and use of graphics. (SP)


248. Analysis of Time Series. (4) Three hours of lecture and two hours of laboratory per week. Prerequisites: 102 or equivalent. Frequency-based techniques of time series analysis, spectral theory, linear filter design, estimation of spectra, estimation of transfer functions, design, system identification, vector-valued stationary processes, model building.

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 as applied to finance, along with some of the most relevant to financial engineering, will be surveyed: Brownian motion, stochastic integrals, Itô’s formula, representation of martingales, Girsanov’s 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 market 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. Prerequisites: Consent of instructor. Selected topics in probability and statistics, particularly in sociology. Possible topics include: analysis of qualitative/categorical data; loglinear models and latent structure analysis; the analysis of cross-classified data having ordered and unordered categories; measurement error models; graphical displays in the analysis of cross-classified data; correspondence 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 course work 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 research process and will discuss general issues in research and consulting. 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 with a satisfactory/unsatisfactory basis. Individual study in consultation with the graduate adviser. Intended to provide an opportunity for qualified students to prepare themselves for the master’s comprehensive examinations. May not be used to meet either unit or residence requirements for a master’s degree. (F,SP)

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. (5-12) Course may be repeated for credit. (F,SP)

601. Individual Study for Master’s Candidates. (1-2) Course may be repeated for a maximum of 16 units. By appointment. Must be taken on a satisfactory/unsatisfactory basis. Individual study in consultation with the graduate adviser, intended to provide an opportunity for qualified students to prepare themselves for the master’s comprehensive examinations. 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. (1-8) Course may be repeated for a maximum of 16 units. Course does not satisfy unit or residence requirements for a doctoral degree. Must be taken on a satisfactory/unsatisfactory basis. Prerequisites: One year of full-time graduate study and permission of the graduate adviser. Individual study in consultation with the graduate adviser, intended to provide an opportunity for qualified students to prepare themselves for certain examinations required of candidates for the Ph.D. degree. (F,SP) Staff

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 satisfac-
tory/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 Dwinelle Annex, (510) 642-1677 http://theater.berkeley.edu
Chair/Director: W.B. Worthen, Ph.D.

Professors
Joe Goode, B.A. Virginia Commonwealth University. Dance, choreography
Mel Gordon, Ph.D. New York University. Stanislavsky, directing, acting
Jenefer Johnson, M.A. Dance history
Christopher Herold, Ph.D. Acting and directing
Lura Dolas, M.A. Acting
Cara Bradbury, B.A. Dance, dance music
Joe Goode, B.A. Virginia Commonwealth University. Dance, choreography
Dunbar Ogden III, Ph.D. Emeritus
John Warren Travis, M.F.A.

Associate Professors
Charlie Berry, Ph.D. University of California, Los Angeles. Asian film history and theory
Shannon N. Jackson, Ph.D. Northwestern University. Performance theory, 20th-century drama

Assistant Professors
Brandi Wilkins Catanese, Ph.D. Stanford University. African dance studies
Sudipto Chatterjee, Ph.D. New York University. Bengali theater, postcolonial studies
Peter Glazer, Ph.D. Northwestern University. Stage directing
Shannon Steen, Ph.D. Stanford University. American Studies, radio/dance studies
Elizabeth Wymore, M.F.A. University of Illinois. Urbana-Champaign. Modern dance technique, choreography

Lecturers
Martin Berman, B.A. Acting
Cara Bradbury, B.A. Dance, dance music
Luna Diblas, M.A. M.A. Acting
Christopher Dolder, M.F.A. Dance
David K. H. Elliott, B.A. Design
Christopher Herold, Ph.D. Acting and directing
Jennifer Johnson, M.A. Dance history
Carol Murota (SCE)/M.A. Dance
Deborah Sussel, B.F.A. Acting

Affiliated Faculty
Janet Adelman (English)
Joel Altman (English)
Judith Butler (Rhetoric and Comparative Literature)
Adi Cheng (English)
Ve-Ve Clark (African American Studies)
Vasudha Dalmia (South and Southeast Asian Studies)
Dru Dougherty (Spanish and Portuguese)
Anton Kaes (German and Film Studies)
John Le (Sociology and Center for Korean Studies)
Laura Perez (Ethnic Studies)
Miriam Silverman (Comparative Literature and East Asian Languages and Cultures)
Kaja Silverman (Rhetoric and Film Studies)
Mary Ann Smart (Music)
Minn-ha-T. Tinh (Gender and Women’s Studies)
Sanja U. (Comparative Literature and East Asian Languages and Cultures)

At Berkeley, we understand performance as a mode of critical inquiry and creative expression. Set within the intellectual resources of one of the world’s great universities, faculty and students in the Department of Theater, Dance, and Performance Studies pursue a wide spectrum of research and production activities, in the broader context of a warranting and critical education in the arts and humanities. The faculty is nationally and internationally known both for its scholarly research—ranging from Sophocles and Shakespeare to performance art, postcolonial theater, and contemporary dance—and for creative work in acting, design, directing, choreography, and performing. The department administers several exciting interdisciplinary Ph.D. programs in theater, dance, and performance studies (the Graduate Group in Performance Studies), and it sponsors the Bay Area Repertory Dance Company (BARD), a resident touring ensemble that tours and performs throughout the year.

Undergraduates in the Department of Theater, Dance, and Performance Studies participate in the strongest traditions of arts and humanities education at Berkeley. Students pursue intensive work in acting, critical studies, design, directing, choreography, and modern concert dance in a major that emphasizes the methodological rigor of the study of performance. The major sets the literary, historical, theoretical, and cultural traditions of performance in dialogue with other arts and humanities disciplines. The faculty teach at all levels, and freshmen and Ph.D. students have ample opportunity to study with major scholars and practitioners in theater, dance, and performance studies. Students have significant opportunities to participate in all aspects of performance, both in the formal season offered by the department, as well as in smaller productions.

Separate major/degree programs are offered in theater and performance studies and dance and performance studies, and students are encouraged to specialize within each program. Although all students fulfill general requirements in all areas of theater or dance practice and performance studies, they may specialize in one of several areas: acting, contemporary dance and choreography, directing, design, technical production, or drama/theater/performance studies. All students at Berkeley are required to fulfill extensive range of requirements in their major areas of concentration. Students majoring in theater and performance studies or dance and performance studies are strongly encouraged to fulfill these requirements in complementary offerings in dramatic literature, visual arts and performance history, and culture and performance in a wide range of departments in the Division of Arts and Humanities and in other units of the College of Letters and Science. Undergraduate majors and minors in the Department of Theater, Dance, and Performance Studies are well-prepared for the future. The flexibility and integration with the humanities characteristic of the major makes them excellent candidates for graduate and professional schools, as well as for continued work and education in theater and dance. Several students have recently been honored by the American College Theater Festival. The department produces a mainstage season of performances in the Zellerbach Playhouse, the Durham Studio Theater, and in Zellerbach Hall, as well as offering a variety of more modest performance opportunities in theater and dance. Auditions for theatrical performances are held at the beginning of each semester. All registered students may earn unit credit for work in theater or dance productions. For further information, inquire at the Department of Theater, Dance, and Performance Studies.

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 (the literature, 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 adviser. 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 or 120

B. Performance and History: 125, C131, 151A, 151B, or 153A

C. Performance Literature: 126, 127, 128, 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. 41, 52AC or 52AC, 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 in critical studies, see areas A, B, C, D under Theater, Dance, and Performance Studies. Students must take one course in three of the areas.

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, 60, 137AC, or African American Studies 29AC.

Upper Division. Five upper division theater arts courses (three of which must be taken at Berkeley) by adviser approval. Students must maintain a minimum GPA of 2.0 in the upper division units for the minor.

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.
arts or from other departments. Sample programs are available in the department office.

Lower Division. One course chosen from 25AC, 40A, 40B, 52AC, 137AC, African American Studies 29AC, 26, or 60.

Upper Division. Five upper division theater arts courses (three of which must be taken at Berkeley) by adviser 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, 185, and 195.

Honors Program

Majors in the Department of Theater, Dance, and Performance Studies with an overall grade-point average of 3.3 or better 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 not later than their junior year. Students accepted in the Honors Program will include in their programs course H195A, intensive study of performance and theater. The objective of this course is to develop a greater understanding of performance arts and their relationship to society. In the second semester of the third year, students will have the opportunity to explore an intellectual topic with a faculty member in a small seminar setting. Berkeley Seminaries are offered in all campus departments, and topics vary from department to department and semester to semester. (F,SP)

Graduate Program

Core Faculty: Janet Adelman (English), Brandi Wilkins Catanese (Theater, Dance, and Performance Arts 20), Ann Smart (Music), Dru Dougherty (SP), Laura Perez (English)

Affiliated Faculty: Joel Altman (English), Judith Butler (Rhetoric and Comparative Literature), Anne Cheng (English), Vévé 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 Korean Studies), Kagari Maeda (Rhetoric and Film Studies), David Voiles (Comparative Literature and East Asian Languages and Cultures).

The Graduate Group in Performance Studies provides an interdisciplinary and individually crafted curriculum directed toward advanced studies in the literatures, performance, cultural contexts, and theories of theater and performance throughout the world. The Ph.D. program is administered by an interdisciplinary graduate group composed of faculty from a wide range of related departments. Students in the Ph.D. program in performance studies conduct research in a diverse array of interdisciplinary methodologies on projects spanning the fields of theater and performance studies.

Lower Division Courses

R1A-R1B, Introduction to Dramatic Literature. (4/4) Three hours of lecture/discussion per week. Prerequisite: Subject A examination or course. Dramatic Art 1A or its equivalent is prerequisite to 1B. Formerly Dramatic Art R1A. Reading and composition in connection with the study of dramatic literature. R1A satisfies the first half of the Reading and Composition requirement, and R1B satisfies the second half. (F,SP)

10. Introduction to Acting. (3) Six hours of studio sessions per week plus preparation and rehearsals to be arranged. Prerequisites: Audition required. Formerly Dramatic Art 10. This is a theory and performance course that provides an overview of the acting process. Basic acting techniques are presented in conjunction with exercises, improvisation, and text work, designed to enhance concentration, imagination, vocal resonance, clarity of speech, self-confidence, and communication skills. (F,SP) Staff

11. Scene Study and Characterization. (3) Six hours of session per week. Prerequisites: Audition required. Formerly Dramatic Art 11. In this course the emphasis of the students’ studies shifts from the development of basic skills to the development of skills necessary to the character actor. Students develop characterizations which lie outside their personal experience by performing characters who are not close to themselves in age or background. Students continue to employ the basic acting and vocal techniques introduced in 10. (F,SP) Staff

12. Speech and Vocal Communication Skills. (2) Four hours of studio per week. Prerequisites: Consent of instructor. Formerly Dramatic Art 12. This course is designed to train students to perform in a clear, effective manner, to develop in a natural flow and to project voice and thought. Techniques, breath, resonance, articulation, and projection practice will be stressed. The International Phonetic Alphabet (IPA) will be used as the vehicle to explain the components of speech sounds. Also work on pitch, rate, quality, and inflection through a variety of material. (SP) Sussel

24. Freshman Seminar. (1) Course may be repeated for credit as topic varies. One hour of seminar per week. Prerequisites: Consent of instructor, Formerly Dramatic Art 24. Section 1 to be graded on a passed/not passed basis. Section 2 to be graded on a letter-grade basis. The study of dramatic literature as a totality. (F,SP)

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 25AC. This course provides an introduction to the cultural values and issues fundamental to the study of theatre and 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,SP)

26. Issues in World Theater. (4) Three hours of lecture per week. Formerly Dramatic Art 26. In each semester an issue of broad relevance to world theater will be addressed through the study of four to six diverse theaters, including non-western, musical, and dance-based forms of the theater. Texts may include play-scripts, video and/or audio recordings, and historical and critical documents. (F,SP) 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: Permission of instructor. Formerly Dramatic Art 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-seminar setting. These seminars are offered in all campus departments; topics vary from department to department and from semester to semester. (F,SP)

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. This is an elementary body movement course which teaches and develops the various motor patterns, utilizing the body and extremities as a totality. (F,SP)

41. Rhythmic Analysis for Dancers. (2) Three hours of lecture/studio per week. Prerequisites: 40A-40B (may be taken concurrently) or consent of instructor. Formerly Dramatic Art 41. Provides an introduction to the language of dance with emphasis placed on note values, rhythmic patterns and dictation, score reading and phrasing. All work will be developed through structural improvisation. (SP)

52AC. Reflections of Gender, Culture, and Ethnicity in American Dance. (3) Three hours of lecture per week. Formerly Dramatic Art 52AC. Working with the premise that the context, content, and form of any dance event serve as a window on culture, we focus on dance associated with at least three of the following groups: African Americans, Asian Americans, indigenous peoples of the United States, Chicanos/Latinos, and European Americans, and consider traditional dance events as well as transcultural currents in American dance. This course satisfies the American cultures requirement. (F,SP) Johnson

60. Stagecraft. (3-4) Two hours of lecture per week and 60 hours of laboratory per semester. Prerequisites: Enrolliona TelieBEARS, consent of instructor given after evaluation during first week of class. Formerly Dramatic Art 60. This course is a practical introduction to the theories, approaches, and applications of construction techniques for the scenic environment, and includes attention to such aspects of production as scenery, lights, sound, costumes, and stage management. Special emphasis will be placed on stage management, scenery and lighting techniques, and stage properties. The course involves a laboratory dimension. Students will work on departmental productions. (F,SP)

66. Special Topics: Theater Arts. (1-4) Course may be repeated for credit as topic varies. One hour of lecture or three hours of laboratory per week per unit. Prerequisites: Consent of instructor. Formerly Dramatic Art 66. 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; Theaters, Tricksters, and Cultural Exchange Art as Solution to the Invisible World (Process Seminar). (F,SP) Staff

84. Sophomore Seminar. (1,2) Course may be repeated for credit as topic varies. One to seven hours 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 the crucial second year. The topics vary from department to department and semester to semester. Enrollment limited to 15 sophomores. (SP)

98. Directed Group Study. (1;1) Course may be repeated for credit. Enrollment is restricted; see the Introduction to Courses and Curricula section of this catalog. One-half to five hours of directed group study per week. Prerequisites: Consent of instructor. Formerly Dramatic Art 98. Group study of a topic not included in the regular department curriculum. Topics may be initiated by students. (F,SP)

99. Independent Study. (1-5) Course may be repeated for credit. Enrollment is restricted; see the Introduction to Courses and Curricula section of this cat-
10A. Intermediate Acting. (3) Three hours of lecture/discussion per week. Prerequisites: Audition. An introduction to acting practice. Focus is on the actor’s role in the creation of a performance. Six hours of lecture per week. (F,SP)

10B. Intermediate Acting. (3) Three hours of lecture/discussion per week. Prerequisites: Audition. An introduction to acting practice. Focus is on the actor’s role in the creation of a performance. Six hours of lecture per week. (F,SP)

110A-110B. 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,SP)

111. Advanced Acting. (3) Course may be repeated for credit. Six hours of sessions per week plus preparation and rehearsal time. Prerequisites: Audition, two years of composition work in acting or consent of instructor. (F,SP)

114. Performance Workshop. (3) Course may be repeated for credit. Six hours of sessions, preparation, and rehearsal per week. Prerequisites: Two years of undergraduate work in acting or consent of instructor. Formerly Dramatic Art 114. Workshop involving advanced actors, directors, and spoken word performers in collaborative development of new performances. Topics include cross-disciplinary arts, solo performance, language, and movement. (F,SP) Staff

115. Advanced Acting: Company Class. (3) Six hours of sessions per week plus preparation and rehearsals. Prerequisites: Two courses from 110A, 162, 163 or 141A and 146A or consent of instructor. Formerly Dramatic Art 115. Intensive group study, rehearsal, and performance of a play or selected dramatic pieces. (F,SP) Staff

116. Advanced Performance Workshop. (3) Course may be repeated for credit. Six hours of class per week plus rehearsals. Prerequisites: Two courses from 110A, 162, 163 or 141A and 146A or consent of instructor. Formerly Dramatic Art 116. An intensive study of the making of a theatrical production with specific attention to the interface between theatrical and dramatic, nondramatic, and non-narrative modes of performance, with an emphasis on the creative roles of director, performers, and producers. Topics vary from semester to semester. (F,SP) Staff

119. Performance Theory. (4) Course may be repeated for credit. Three hours of lecture per week. Prerequisites: 1A-1B or 110A or consent of instructor. Formerly Dramatic Art 119. An overview of a particular topic, with specific attention to the interface between theoretical and practical aspects of performance. Topics vary from semester to semester. (F,SP) Staff

120. Twentieth-Century Theory and Performance. (4) Three hours of lecture/discussion per week. Prerequisites: Formerly Dramatic Art 120. This course is an overview of representative schools, documents, theorists, and performance texts from modern and contemporary drama and dance. These include narratives of a theoretical topic or perspective on performance, with specific attention to the interface between theoretical and practical aspects of performance. Topics vary from semester to semester. (F,SP) Staff

121. Performance and Culture. (4) Course may be repeated for credit as topic varies. Three hours of lecture per week. Formerly Dramatic Art 121. An examination of performance as an aspect of cultural production, ranging from everyday-life enactment to more formal or aesthetic activities associated with “artistic” production; may involve visiting artists. Specific attention to the methods of ethnography, cultural studies, and intercultural performance analysis. Topics vary from semester to semester. (F,SP) Staff

125. Performance and History. (4) Course may be repeated for credit as topic varies. Three hours of lecture per week. Formerly Dramatic Art 125. An examination of the historical conditions of performance, either given in a historical period or comparatively, with specific attention to the relationship between specific historical conditions and performance. (F,SP) Staff

126. Performance Literatures. (4) Course may be repeated for credit as topic varies. Three hours of lecture per week. Formerly Dramatic Art 126. An examination of the historical, ideological, and cultural dynamics of performance, with specific attention to the relationship between methods of literary studies and performance; may involve visiting artists. Topics vary from semester to semester. (F,SP) Staff

127. Topics in Drama and Theater: 1918 to Present. (3) Course may be repeated for credit. Three hours of lecture per week. Formerly Dramatic Art 127. Contemporary drama. (F,SP)

128. Shakespeare in Performance. (3) Three hours of lecture/discussion per week. Formerly Dramatic Art 128. Course may be repeated for credit. Three hours of lecture per week. Formerly “Shakespeare in Performance.” Three hours of lecture per week. Formerly Dramatic Art 129. Shakespeare’s major plays. Readings and discussion in English. Also listed as Scandinavian C108. Formerly Dramatic Art C129. (F,SP)

129. Senior Seminar. (3) Course may be repeated for credit. Three hours of lecture per week. Prerequisites: 120, senior standing, or consent of instructor. Formerly Dramatic Art 129. An in-depth exploration of existing styles and forms of movement and their musical and physical control. (F,SP) Staff

130. Dance and Dance-Drama of India. (3) Three hours of lecture per week. Prerequisites: Any Reading and Composition course (1A-1B) or consent of instructor. Formerly Dramatic Art 130. 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, makeup, and masks will be compared in major forms. Readings will be drawn from an extensive collection of dance theory and dance drama. Students will have the opportunity to learn some of the musical rhythms and dance movements. (F,SP) Staff

131A. African American Plays from 1858 to 1959. (3) Three 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 film. Emphasis on the thematic consequences of those choices. Plays will be analyzed both as literature and as theatrical production; e.g., laboratory will include attendance at plays and performance of plays. Also listed as African American Studies C132A. (F,SP)

131B. Contemporary African American Drama. (4) Four hours of lecture per week. Formerly Dramatic Art C131B. An examination of the writings of 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 African American Studies C131B. (SP)

132. 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 primacy of dramatic forms chosen by African American playwrights and the thematic consequences of those choices. Plays will be analyzed both as literature and as theatrical production; e.g., laboratory will include attendance at plays and performance of plays. Also listed as African American Studies C132B. (F)

133. History of the African American Music Theater. (3) Course may be repeated for credit subject to acceptance of petition. Three hours of lecture per week. Formerly Dramatic Art C133. This course will cover the origins and development of the African American 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 African American Studies C146.

137AC. Across Disciplines: 20th-Century Art Forms. (4) Three hours of lecture per week. Formerly Dramatic Art 137AC. This course is an introduction to the interstitial explorations in the works of 20th-century artists using examples from various art forms including dance, painting, sculpture, printmaking, writing, theatre and performance art. The course will focus on the work of individual artists and examine how different perspectives, exchanges of materials, and borrowings of forms define and transform what comes to be considered art. Also listed as Interdisciplinary Studies 137AC. This course satisfies the American cultures requirement.

139. Playwriting. (3) Three hours of lecture/discussion per week. Prerequisites: Consent of instructor. Formerly Dramatic Art 139J. Fundamental techniques and critical analysis of written work. (F)

141A-141B. Intermediate Modern Dance Technique. (1,1) Course may be repeated for credit. Seven and one-half hours of studio per week. Prerequisites: 40A-40B, audition, or consent of instructor. Formerly Dramatic Art 141A. Development of physical control through off-center movement and its utilization in spatial exploration. (F,SP)

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-40B, audition, or consent of instructor. Formerly Dramatic Art 142A. Refinement of movement techniques and qualitative analysis of movement with regard to rhythm, dynamics, and style. (F,SP)

143A-143B. Company Class. (1,1) Course may be repeated for credit. Seven and one-half hours of studio per week. Prerequisites: 141A-141B, audition, or consent of instructor. Formerly Dramatic Art 143A. Exploration of existing styles and forms of movement and their musical relationship using both individual and group awareness. (F,SP)

144. Sources of Movement. (3) Three and one-half hours of lecture/studio per week. Prerequisites: 40A-40B, or consent of instructor. Formerly Dramatic Art 144B. Beginning application of dance technique as a means of integrating physical and mental experiences. Emphasis on basic technical fundamentals as a means of extending natural movement in rhythm, energy, and space with emphasis on style and qualitative analysis. (SP)

145. Music Resources for Dancers. (2) Three hours of lecture/studio per week. Prerequisites: 144 or consent of instructor. Formerly Dramatic Art 145. An historical overview of the different periods of music in specific relation to dance. Methods of research, analysis of choreographic sources of music, and experiment in their usage. (F)

146A-146B. Choreography. (1-3;1-3) Course may be repeated for credit. Four and one-half hours of lecture/studio per week. Prerequisites: Consent of instructor and 114 or 144. Formerly Dramatic Art 146A. An examination of theories of form and structure and their practical application in relation to content. (F) Staff

147. Dance Analysis. (5-3) Course may be repeated for credit. Four and one-half hours of lecture/studio per week. Prerequisites: 142A-142B and 144, or consent of instructor. Formerly Dramatic Art 147. Development in the methods and principles of class construction with emphasis placed on movement development. (F) Murota

148. Introduction to Movement Improvisation. (1) Three hours of studio per week. Must be taken on a pass/fail basis. Prerequisites: Consent of in...
149. Repertory and Production. (5-3) Course may be repeated for credit. Variable studio (one-half unit per dance). Prerequisites: Consent of instructor. Formerly Dramatic Art 149. Advanced students of dance are to be organized as a company for the development of a dance repertory for public performance, the creation of new dance works, and the study of those already created. Some classes may be held off campus or away from the Berkeley campus. (F,SP)

151A. Theater History. (3) Three hours of lecture per week. Prerequisites: Consent of instructor. Formerly Dramatic Art 151A. A chronological survey of world theater from 1800 to the present, this course begins with an investigation of “performance behavior”—the human impulse to organize complex games, rituals, and other display activities. It explores the mythological and historical origins of theater in various cultures as well as the derivation of the first dramatic scripts. A heavy emphasis is placed on the analysis of the “promptbooks” and visual sources of early European and Asian theaters for a practical understanding of their scenic and acting styles. (F,SP)

151B. Theater History. (3) Three hours of lecture per week. Prerequisites: Consent of instructor. Formerly Dramatic Art 151B. A chronological survey of Western theater and the rise of avant-garde and popular forms. Rapidly changing social conditions, cultural tastes, and technological advances in the 19th and 20th centuries are studied in tandem with the development of theatrical productions and movements, playmaking, and acting styles. (F,SP)

153A. History of Western Dance. (3) Three hours of lecture per week. Formerly Dramatic Art 153A. The history of theatrical dance from its origins in ritual and popular culture through the 19th century. Topics include dance in Greek comedy and tragedy; pantomime in the Roman Empire; the medieval Dance of Death and Dancemania; politics and dance in Renaissance and Baroque courts; the development of ballet d’action; and the 19th-century ballet masterpieces, including La Sylphide, Giselle, Swan Lake, and Sleeping Beauty. (F) Johnson

153B. Changing Forms in 20th-Century Dance. (3) Three hours of lecture per week. Formerly Dramatic Art 153B. A chronological survey of a large selection of works by 20th-century ballet, modern, and postmodern choreographers. We emphasize how dance reflects and affects political climate, social values, religious beliefs, and social constructions of gender by examining a variety of dance themes, movement vocabularies, and styles. (SP) Johnson

160. Stagecraft. (3) Two hours of lecture per week and 60 hours of laboratory per semester. Prerequisites: Consent of instructor. Formerly Dramatic Art 160. This course is an advanced discussion and practice of theories, approaches, and applications of techniques for the production environment, and includes attention to such aspects of production as scenery, lights, sound, costume and stage management. There will be special emphasis on production organization and problem solving in connection with the laboratory dimension of the course. Students will work in a supervisory capacity on departmental productions. (F,SP)

162. Fundamentals of Stage Directing. (3) Four hours of lecture/discussion per week plus preparation and rehearsals to be arranged. Prerequisites: 10 or 120; Junior standing and consent of instructor. Formerly Dramatic Art 162. A preliminary study of fundamental concepts of stage composition, blocking and analysis of dramatic texts for the director. (F,SP)

163. Stage Directing. (3) Four hours of lecture/discussion per week. Prerequisites: 162 and 163 or consent of instructor. Advanced workshop and study of directorial practices. Students develop individual projects for production. (F,SP) Staff

166. 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. Prerequisites: Consent of instructor. Formerly Dramatic Art 166. 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; Theaters, Tricksters, and Cultural Exchange; Art as Social Action; and The Invisible World (Process Seminar). (F,SP) Staff

170. Theatre Laboratory. (1-3) 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 171. Practice in acting and/or dance in Dramatic Art productions. (F,SP)

172. Advanced Production Study. (3-4) Course may be repeated for credit. Two hours of lecture and three to six hours of laboratory per week. Prerequisites: Consent of instructor. Formerly Dramatic Art 172. Study of production techniques and procedures related to production management, stage management, and theater administration. (F,SP)

173A-173B. Scenography: Scene Design for the Theatre. (3) Three hours of lecture and three hours of laboratory per week. Prerequisites: 173A is prerequisite to 173B. (F,SP)

174A-174B. Scenography: Costume Design for the Theatre. (3) Three hours of lecture and three hours of laboratory per week. Prerequisites: Consent of instructor. (F,SP)

175A-175B. Scenography: Lighting Design for the Theatre. (4) Four hours of lecture per week and laboratory 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)

176. Applied Theatrical Design. (1-3) Course may be repeated for credit. Two hours of lecture/discussion and five hours of laboratory per week. Prerequisites: One semester of theatrical design (173, 174, 175) or equivalent and at least two semesters of experience. Formerly Dramatic Art 176. Students of set, costume, and lighting design are provided experience, structure, and support in the practical application of design to the stage in department productions. Interaction and team approach of the designers will be promoted from the earliest stages of conceptualization through the opening night and the run of the production(s). (F,SP) Staff

178. History of Costume. (3) Three hours of lecture and three hours of laboratory per week. Prerequisites: Consent of instructor. Formerly Dramatic Art 178. History of costume in relation to social change. Laboratory instruction in conservation and restoration of costumes. (F)

179. Supervised Theatrical Design. (1-3) 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

180. Theatrical Realization of Dance. (1-3) Course may be repeated for credit. 130 hours of laboratory per semester. Prerequisites: Audition or consent of instructor. Formerly Dramatic Art 180. This course relates choreography to theatrical presentation. Laboratory hours are spent in attendance at rehearsal, dress rehearsals, and performances presented at the Berkeley Art Museum, Pacific Film Archive, and Cal Performances. The work of well-established artists is used to illustrate 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.

C183A. Performance: An African American Perspective. (3) Three hours of lecture per week. Formerly Dramatic Art C183A. Introduction to the Research-to-Performance Method. African American 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.

C183B. Research-to-Performance Laboratory. (3) Three hours of lecture per week. Formerly Dramatic Art C183B. Development of scholarly material for theatrical representation 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 C143C.

184. Theatrical Representation of Individual Dances. (1) Three hours of laboratory per week. Prerequisites: Consent of instructor. Formerly Dramatic Art 184. This course relates choreography to theatrical representation. Laboratory hours are spent in attendance at rehearsal, dress rehearsals, 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 life-long habits of involvement in and appreciation of the fine arts. (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 is the performance of the arts at Berkeley 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 life-long habits of involvement in and appreciation of the fine arts. (F,SP) Staff

H195A. Honors Course. (4) Hours to be arranged. Prerequisites: Honors standing in the Department of Theatre, Dance, and Performance Studies. Students who have been accepted into the University Honors Program major in Dramatic Art may participate in this advanced program of research. Students will work under the supervision of a faculty member and may design their own research. In addition to the structured core curriculum in performance, acting and/or dance in Dramatic Art productions. (F,SP)

C197A. Honors Seminar. (3) Three hours of lecture per week. Formerly Dramatic Art C197A. An interdisciplinary seminar for students involved in research and performances 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 life-long habits of involvement in and appreciation of the fine arts. (F,SP) Staff
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 195B. 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: Completion of an audition; theater 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 Curricula for the prerequisites. Field studies are 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 field 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 Curricula for the prerequisites. Hours to be arranged. 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 Curricula for the prerequisites. Hours may be arranged. May 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 final enrollment for the degree. Formerly Dramatic Art 200. This course is designed to introduce graduate students to the research resources of the University, to the requirements 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)

201. Performance Theory. (4) Three hours of seminar per week. Formerly Dramatic Art 201. This core seminar for graduate students focuses on key issues in the theory of theatrical performance, with an emphasis on contemporary theoretical inquiries on relationships of representation and identity, presence, community, social efficacy, reception and its effects, and the roles of performers and production elements will be addressed. (F,SP) Staff

202. Methodologies and Approaches to Theater in Context. (4) Three hours of seminar per week. Formerly Dramatic Art 202. Study of different approaches and contemporary methodologies for analyzing theoretical performances 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 seminar 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. Formerly Dramatic Art 266. Topics vary. Two or more units of credit per semester. May be repeated for elective credit. (F,SP) Staff

277. Special Studies in Directing. (1-4) Course may be repeated for credit. Hours to be arranged. Prerequisites: Completion of one year of graduate study recommended. Formerly Dramatic Art 277. Special study or research of topics not covered by regular courses or seminars. May not be substituted for available seminars. (F,SP) Staff

278. 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 278. Special study or research of topics not covered by regular courses or seminars. 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) Staff

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)
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 offers students access to a wide range of majors and even fields of study usually reserved for graduate experience in Berkeley's large lecture halls. These seminars, which emphasize interaction and discussion, provide a counterpoint to the learning experience in Berkeley's large lecture halls. These seminars offer lower division students the opportunity to explore an intellectual topic with a faculty member or 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. Enrollment limited to 15 freshmen. (F,SP)

### Minor Programs

**The Creative Writing Minor** requirements consist of three upper division creative writing courses and two upper division literature courses. Students may choose among 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 Office of Undergraduate and Interdisciplinary Studies Teaching Program office (101 Stephens Hall, (510) 642-4466) or visit the program office at http://learning.berkeley.edu/creative.

### 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 in writing.** Enrolled Berkeley students may search for awards on Scholarship Connection’s online database, http://scholarships.berkeley.edu. In addition to providing information on variously externally funded awards, Scholarship Connection also administers the campus recruitment and selection for several highly competitive awards such as the Rhodes, Marshall, and Truman Scholarships. Scholarship Connection staff members function as individual advising to help applicants prepare competitive applications for these prestigious awards. For more information, visit the Research @ Berkeley home page: http://research.berkeley.edu/ucd/c.

**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. The Freshman Seminar Program has been designed to engage new students in the early stages of a career and 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)

24. **Freshman/Sophomore Seminar.** (2-4) 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. Sections 3-4 to be graded on a passed/not passed basis. The Freshman Seminar Program has been designed to guide new students in the early stages of a career and 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. (F,SP)

R44. **Topics in Western Civilization.** (3) Three hours of lecture and two hours of discussion per week. Prerequisites: Completion of Subject A 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)

R44B. **Topics in Western Civilization.** (3) Three hours of lecture and two hours of discussion per week. Prerequisites: Completion of Subject A requirement. Formerly 44B. Will include the New Testament, readings in Medieval literature (St. Augustine 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)

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:
R55A. The Development of World Civilization. (5) Three hours of lecture and three hours of discussion per week. Formerly 55A. An introduction to the major cultures of the world, on a broad comparative level, since 1500. The course will focus on the process whereby the major parts of the world have become increasingly connected economically and technologically, and how the various cultures have responded, voluntarily or involuntarily, to this experience. Satisfies either half of the Reading and Composition requirement. (SP) Riegel

R55B. The Development of World Civilization. (5) Three hours of lecture and three hours of discussion per week. Formerly 55B. An introduction to the major cultures of the world, on a broad comparative level, since 1500. The course will focus on the process whereby the major parts of the world have become increasingly connected economically and technologically, and how the various cultures have responded, voluntarily or involuntarily, to this experience. Satisfies either half of the Reading and Composition requirement. (F) Riegel

56AC. Crossroads: California and the World. (4) Three hours and two hours of discussion per week. This course examines the place of California in the development of the internationalization of economies, the globalization of cultural flows, and the transnationalism of human migrations. Through a comparative analysis of the forces that work to expand and contract the migratory forces of specific groups as a means of understanding the economic and cultural interactions between California and the world and their effects here and abroad. This course satisfies the American cultures requirement. (F,SP) Saragoza

77. The Performing Arts on Campus. (1) Course may be repeated for credit. One hour of lecture per week. Must not be taken on a passed/not passed basis. Attendance at a series of campus performances in music, dance, and theater followed by historical and critical analysis of the artistic vision and practice characterizing the event. (F,SP) Christ

79. Undergraduate Colloquium. (1) Course may be repeated for credit if topic changes. One and one-half hours of instruction per week. Must be taken on a passed/not passed basis. Formerly Freshman Sophomore Studies 79 and Interdisciplinary Studies 79. Topics change each semester. Check the schedule of classes in order to be certain. (F,SP)

86. 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. Seminars for the group study of topics not covered by regularly scheduled courses. 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 peoples, and the impact of disabilities on the quality of life. Issues of language and identity are emphasized. Upper division credit. (F,SP) Staff

112. Women and Disability. (3) Three hours of lecture per week. This course will explore the lived experiences 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, reproduction, 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 a range of physical, emotional, and psychological disabilities on the lives of individuals and social forces and public policy. We will explore the dynamics of disability through the prism of the political economy. The making of the global disability movement will be examined. The course readings will include sociological, feminist, and critical disability theory. Additionally, we will raise questions about the prevalence of disability among women, focusing on how various factors such as gender and race shape the lived experience of disability. This course will cover the American experience and is required of all students. (SP) Riegel

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 divide those who are involved in the movement. It examines the role of gender, race, class, and disability in the disability movement. The course will also discuss the social construction of disability and its impact on the lives of disabled people. It will introduce students to the history of the disability rights movement and its relationship to other social movements. (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 will explore the ways in which children and youth have been perceived and treated throughout history. The course will consider the role of children in society, the influences that shape their lives, and the ways in which children have been represented in the media and in popular culture. The course will also discuss the history of social welfare programs and the impact of these programs on the lives of children. (SP) Sherry

C133. Jewish Civilization: Middle Ages. (4) Three hours of lecture and two hours of discussion per week. This course will examine the history of Jewish civilization from the Middle Ages to the present. The course will cover the historical and cultural context in which Jewish civilization developed, the impact of Jewish culture on Western society, and the development of Jewish thought and literature. The course will also consider the role of Jews in the development of Western civilization and their contributions to the arts and sciences. (SP) Staff

C134. The American Forest: Its Ecology, History, and Management. (3) Three hours of lecture per week. This course will introduce students to the ecology and management of the American forest. The course will cover the biological and ecological factors that influence the growth and development of trees, as well as the social and economic factors that affect the management and use of forests. The course will also consider the role of forests in the history and culture of the United States. (SP) Riegel

C135. Visual Autobiography. (4) Three hours of lecture and two hours of discussion per week. This course will examine the representation of personal experience and identity through visual media, such as photography, video, and digital art. The course will cover the history and theory of visual autobiography, as well as the techniques and practices of creating visual stories. The course will also include a project component in which students will produce their own visual autobiographies. (SP) Sherry

C136. The American Forest: Its Ecology, History, and Management. (3) Three hours of lecture per week. This course will introduce students to the ecology and management of the American forest. The course will cover the biological and ecological factors that influence the growth and development of trees, as well as the social and economic factors that affect the management and use of forests. The course will also consider the role of forests in the history and culture of the United States. (SP) Garza

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? How can we achieve this? The course will provide an overview of the field and will introduce students to major theories and methodologies. The course will also examine case studies of successful office design and will provide opportunities for students to apply what they have learned. (F,SP) Riegel

C145A. Social Patterns, Social Movements. (4) Three hours of lecture per week. This course will examine the social patterns and social movements that have shaped American history. The course will cover the history of social movements in the United States, including movements for civil rights, labor rights, women's rights, and environmental protection. The course will also consider the role of social movements in shaping public policy and societal change. (F,SP) Sherry

C145B. Cultural Representations of Sexualities: Queer Visual Culture. (4) Three hours of lecture per week. This course examines modern visual cultures that construct ways of seeing diverse sexualities. Considering Western conceptions of representation during the modern period, we will investigate the social forces and discourses that sustain a newly imagined or re-imagined sexual identity across time. Also listed as Women's Studies C145A. (F,SP) Riegel

C146. Cultural Representations of Sexualities: Queer Visual Culture. (4) Three hours of lecture per week. Formerly 145B. This course examines modern visual cultures that construct ways of seeing diverse sexualities. Considering Western conceptions of representation during the modern period, we will investigate the social forces and discourses that sustain a newly imagined or re-imagined sexual identity across time. Also listed as Women's Studies C145A. (F,SP) Riegel

C147B. Sexuality, Culture, and Colonialism. (4) Three hours of lecture and two hours of discussion per week. Formerly 147. This course focuses on the production of sexualities, sexual identification, and gender differentiation across multiple discourses and locations. Also listed as Ethnic Studies 214C. (F,SP) Alarcon

148. Special Topics: Studies in Sexuality and Culture. (4) Course may be repeated for credit as topic varies. Three hours of lecture per week. Intensive investigation of a topic related to the study of sexualities in culture. Original research and extensive writing will be required. (F,SP) Riegel

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 in 70 CE. The course will explore the current state of our knowledge, including the legacy of ancient Near Eastern myth and religion, the history of Israelite religion, the literary features of biblical narrative, and the Dead Sea Scrolls. Also listed as Near Eastern Studies C135 and Religious Studies C132.

C153. Judaism in Late Antiquity. (4) Three hours of lecture and one hour of discussion per week. This course will examine the emergence and development of Rabbinic Judaism, its piety, institutions, thought, and literature. Also listed as Religious Studies C133 and Near Eastern Studies C133.

C154. Jewish Civilization: Middle Ages. (4) Three hours of lecture and one hour of discussion per week. This is the second course in a four-course sequence in the history of Jewish culture and civilization. It covers...
170. Selected Topics: Ethics in Contemporary Society. (3) Course may be repeated for credit as topic varies. Three hours of lecture and one hour of discussion per week. Ethical issues confronting contemporary institutions or disciplines or both. Course is directed to allow students to reflect critically on the ethical responsibilities of individuals in the modern world. Topics include ethical issues raised by the mass media, medicine, law, new technologies, etc. (F,SP)

192. Supervised Research. Course may be repeated for credit. One-on-one faculty/student research. Requires three hours of work per week per unit. Must be taken on a passed/not passed basis. Directed individual research on topics connected to faculty scholarship. (F,SP)

H195A-H195B. Senior Honors Thesis. (3.5) Hours to be arranged. Credit and grade to be awarded on completion of sequence. Prerequisites: Senior standing in individual major. This is a required course for students wishing to graduate with honors in the individual major. It entails writing a thesis pertaining to the student’s individual area of concentration within the individual major and serves to integrate and synthesize the principal themes common to the courses comprising the major. (F,SP)

C196W. Special Field Research. (10.5) Course may be repeated for a maximum of 12 units. 240-300 hours work per semester plus regular meetings with the faculty supervisor. Prerequisites: Consent of instructor. Formerly 196W. Students to work in selected internship programs approved in advance by the faculty coordinator and the sponsoring agency. Each agreement contract has 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 no fewer than 35 pages. Other restrictions apply; see faculty adviser. Also listed as History of Art C196W, Women's Studies C196W, Mass Communications C196W, Political Science C196W, History C196W, Political Economy of Industrial Society C196W, and Sociology C196W.

198. Directed Group Study for Upper Division Students. (1-4) Course may be repeated for credit as topic varies. Must be taken on a passed/not passed basis. Seminars for group study of topics not covered by regularly scheduled courses. Topics may vary from semester to semester. Students must have completed 60 units to be eligible to enroll. (F,SP)

199. Supervised Independent Study. (1-4) Course may be repeated for credit. Enrollment requirements apply; see the Courses and Curricula section of the General Catalog. Hours to be arranged. Must be taken on a passed/not passed basis. Directed independent study and research by arrangement with faculty. Intended as thesis course for individual majors not enrolled in honors course, UGIS H195A-H195B. (F,SP)